

# **DESIGN-BUILD STANDARD GUIDANCE**

**TENNESSEE DEPARTMENT OF TRANSPORTATION**



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# CHAPTER 1: DESIGN-BUILD INTRODUCTION

This Design-Build Standard Guidance (**DB Standard Guidance**) is intended to provide the Design-Builder with the procedures that are required by law, regulation, rule, policy and standard for the use of Federal Aid and State Highway funds for transportation projects. If the procedures included in this **DB Standard Guidance** are not followed, federal and/or state funding are subject to be withdrawn from the project. Considerable effort has been made to provide guidance on how to accomplish the work, document the results, and to incorporate the flexibility options provided by the Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU), the applicable Federal laws, rules, regulations and policies, and the applicable State of Tennessee laws, rules, regulations and policies. The Design-Build federal requirements can be found within 23 CFR 636.

To minimize confusion, technical guides and resource information are incorporated into this **DB Standard Guidance** by reference below. The Design-Builder may access them on-line or download them for ready field reference.

If at any time the design of the project potentially affects the approved FHWA NEPA document, the Design-Builder shall cease work and contact the Department Alternative Contracting Office.

## 1.1. DESIGN-BUILDER REPRESENTATIVE

The Design-Builder Project Manager, as stated within the **Contract Book 2 (Design-Build Contract)**, will be responsible for the administration of the project, including, but not limited to: requesting payment, supervision of all project personnel, authority to request changes, and accountability for Contract compliance.

## 1.2. PURPOSE

The Design-Build Standard Guidance is intended to help Design-Builders conduct, design, construction, ROW, utility relocation and environmental regulatory processes of transportation facilities and project administration of projects contracted through the Design-Build program. To assist Design-Builders in accomplishing these goals, this **DB Standard Guidance** describes the processes, documents, and approvals necessary to develop, design and construct transportation projects and defray costs.

This **DB Standard Guidance** is a compilation of information from many sources and is guidance on administrative and field personnel associated with the Design-Builder.

The Alternative Contracting Office within the HQ Construction Division is the area within the Tennessee Department of Transportation (the Department) that serves the Design-Builder. After award, personnel in this office are available to assist the Design-Builder with answers to their questions about this **DB Standard Guidance**. Alternative Contracting Staff names and phone numbers can be found at <http://www.tdot.state.tn.us/construction/>

Unless stated elsewhere within this **DB Standard Guidance** or any Design-Build Contract Book, all work shall be completed in accordance with the most current version of the Department's Standard Specifications for Road and Bridge Construction, the Department

Roadway Design Guidelines, the Department Standard Roadway and Structures Drawings and the Department Standard Operating Procedures (e.g. Construction Circulars, Materials and Tests SOPs, etc.), including all supplements and addenda.

Wherever the terms “By the Engineer”, “By the Contractor” or “By the Consultant” are used in the context of a matter or function for responsibility under the Department’s Standard Specifications, the Department Roadway Design Guidelines, or any of the Design-Builder’s Programs or Plans, “By the Engineer”, “By the Contractor” or “By the Consultant” shall mean “Design-Builder” unless stated elsewhere in any Design-Build Contract Book.

Wherever the term “By the Engineer” is used in the context of verification or Independent Assurance testing, Construction Engineering and Inspection (CE&I) and Review and Acceptance requirements, it is the responsibility of the Department, unless the Design-Builder is required to hire an independent representative as specified in the Contract. If the Design-Builder does not understand the assumption in a given context, the Design-Builder shall obtain clarification from the Department Alternative Contract Office prior to acting. Additionally, the Department may issue a clarification to the Design-Builder on its own initiative at any time. The Department’s determination shall be final.

In all cases in which notice is to be given to the “Engineer”/Design-Builder, it shall also be given to the Department.

### **1.3. ORGANIZATION OF DESIGN-BUILD STANDARD GUIDANCE**

The Design-Builder should be able to find answers to most questions regarding procedural requirements for Design-Build contracted transportation projects within this **DB Standard Guidance**. This **DB Standard Guidance** is organized to reflect the flow of a project through the major phases of development and to incorporate the differing developmental needs of different projects.

The Department will assign a designated Department contact person for different steps throughout this **DB Standard Guidance**. The designated contact people will be given to the Design-Builder after award of the Contract. The Design-Builder is to contact the Department Alternative Contracting Office for this information if not received prior to the initial Notice to Proceed (NTP).

## CHAPTER 2: DESIGN-BUILD MANAGEMENT

It is the Department's position that the Design-Builder shall design, manage and construct the Project. The Design-Builder will submit the information and documents outlined in the Contract Books as well as this **DB Standard Guidance**. The Design-Builder may request technical assistance from the designated the Department contact person at any time.

The Department Alternative Contracting Office is the single the Department point of contact for project correspondence and submittals throughout the life of a project, unless a designated the Department contact person is stated in writing to the Design-Builder for specific Milestones, tasks, or activities. The Alternative Contracting Office will seek answers to technical questions from the technical areas of the Department. The Design-Builder is required to place the Project Identification Number (PIN) (PIN XXXXXX.XX), the DB Contract Number (CDBXXX) and Project Description including County on all correspondence with the Department.

### 2.1. ASSIGNMENT OF FUNDS

It is understood that the Department acts on the behalf of FHWA for the administration of construction projects and that in accordance with federal regulations, funds may be withheld for non-compliance of federal rules and regulations (23 CFR 1.36):

**“If the Administrator determines that a State has violated or failed to comply with the Federal laws or the regulations in this part with respect to a project, he may withhold payment to the State of Federal funds on account of such project, withhold approval of further projects in the State, and take such other action that he deems appropriate under the circumstances, until compliance or remedial action has been accomplished by the State to the satisfaction of the Administrator.”**

### 2.2. LIMITATION OF OPERATIONS

The Design-Builder shall comply with all Contract provisions and shall perform its work in accordance with the following:

- Conduct the work at all times so as to cause the least interference with traffic;
- Not begin work that may allow damage to work already started.

The Design-Builder shall not begin any work until the Design-Builder has completed the following:

- Received Initial Notice to Proceed;
- Met with the Department at Post Award Meeting;
- Received approval of the CPM Schedule.

The Design-Builder shall not begin any On-Site work (or as specified) until the Design-Builder has completed the following:

- No grading shall occur until all applicable water quality permits and stormwater permit coverage are received for the entire project (posted on-site);
- Met with the Department at the required pre-construction conference;

- Safety Manager has been appointed, if required by the Contract, and has commenced duties.

The Department Construction Division's Circular Letter File contains general guidance and requirements for the proper administration of projects besides that provided in this document. A copy of this file is located at [http://www.tdot.state.tn.us/construction/Circular\\_Letters/circltr.pdf](http://www.tdot.state.tn.us/construction/Circular_Letters/circltr.pdf).

## 2.3. NOTICES

Various notices are necessary to notify the Department of important events relating to the Project throughout the Design-Build process.

- An initial Notice to Proceed (NTP) will be issued by the D-B Program Manager as soon as possible from the date the Contract is executed by the Department.
- Interim NTP's will be issued by the D-B Program Manager (or designee) for the following Major Milestones, as well as other as determined on a project-by-project basis:
  - ROW Appraisal NTP - Review and Acceptance of Definitive Design Plans (only when these responsibilities are included in the Design-Builder's scope of work for the Contract) for the segment or phase of construction to begin.
  - ROW Negotiation NTP – Review and Acceptance of the Appraisal Process.
  - ROW Closing NTP - Review and Acceptance of the Negotiation Process and court settlements have occurred.
  - ROW Certification NTP – Review and Acceptance of the Negotiation Process.
  - Utility Relocation NTP – only if utilities will be relocated by the Department.
  - Construction NTP - Review and Acceptance of Readiness-For-Construction Plans for the segment or phase of construction to begin.

- Start Dates

Within one (1) week of starting work, the Design-Builder Project Manager shall send a notice that design and/or construction Milestone work has started to the D-B Program Manager (or designee).

- Completion Dates

Interim completion dates (if any) and the contract completion dates are specified in the Contract Documents. If an earlier Interim Completion Time/Date or Contract Completion Time/Date as specified in **Contract Book 2 (Design-Build Contract)** is proposed by the selected Design-Builder, and accepted by the Department, then the earlier Interim Completion Time/Date or Contract Completion Time/Date, as applicable, shall become the baseline Completion Time(s)/Date(s) and shall be incorporated into the Contract.

The Design-Builder Project Manager shall send the D-B Program Manager (or designee) a construction completion notice when all items of work have been inspected and are complete for any interim or contract completion dates. The construction completion notice shall be sent within one (1) week after all items are accepted as complete.

- End of Contract Time

When the Design-Builder believes that all work except for plant establishment has been completed, the Design-Builder may request in writing that the Department conduct an inspection to determine whether the work is complete. Final Acceptance shall be in accordance with the Department's Standard Specifications, Subsection 105.15. Any work determined not complete shall be communicated to the Design-Builder in writing. The Design-Builder shall complete all tasks in an expeditious manner within the time frame proposed by the Department. Upon determining that all work, except for plant establishment, has been completed, the D-B Program Manager (or designee) will issue Final Acceptance Letter.

Upon presumptive completion of the Project and due notice from the Design-Builder, the Department will make an inspection. If all items of work are completed to the Department's satisfaction, the Department will accept the Project and stop time charges as of the date of the inspection. However, if the inspection reveals that some items of work remain to be completed, the Department will direct the Design-Builder to complete these items and continue charging time until all work has been satisfactorily completed, regardless of the number of inspections required prior to project acceptance. Time will be charged until all work is complete, including punch list items. However, time will not be charged while waiting for the appropriate officials to inspect the Project.

- Notice of Delay

The Design-Builder shall notify the Department of any delay that will likely prevent completion of any On-Site work by the applicable Interim Completion Date(s) or of all work by the Contract Completion Date specified in the Contract. The notice shall be in writing in accordance the Department's Standard Specifications, Subsection 108.06.

## **2.4. POST AWARD MEETING**

- Quality Plan, if required by the contract;
- Safety Plan, if required by the contract;
- Environmental Compliance Plan, if required by the contract;
- Critical Path Method (CPM) Schedule (Cost and Time Loaded, as well as expected percent complete for each Pay Item);
- Other plans as specified by the Department.

Within 30 Calendar Days of Award and prior to the start of work, unless otherwise authorized in writing by the Department, the Design-Builder shall meet with the Department to discuss Progress Schedule at the Post Award Meeting. The Design-Builder's Project Manager shall consult with the designated Department Construction contact person and shall arrange and lead a Post Award meeting.

The agenda shall be developed in consultation between the designated Department contact person and the Design-Builder and prepared by the Design-Builder, which shall include, at a minimum, all of the following:

- Design development and Design Review process;
- Design development and Design Review schedules;

- Critical Path Method (CPM) Schedule;
- Quality Plan, if required by the Contract;
- Safety Plan, if required by the Contract;
- Environmental Compliance Plan, if required by the Contract; and
- Other plans as specified by the Department.

## 2.5. QUALITY PROGRAM AND QUALITY PLAN

The Design-Builder shall be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications, geotechnical and other services furnished by the Design-Builder under the Contract.

The Design-Builder shall, without additional compensation, correct all errors or deficiencies in the surveys, designs, drawings, specifications, and/or other services.

No fabrication, casting, or construction will occur until all related design review and shop drawing review comments are resolved.

The Department is responsible for providing the required Construction Engineering and Inspection (CEI) and Quality Assurance Engineering, unless stated otherwise in the Contract, as described in Chapter 7 of this **DB Standard Guidance**. However, the Design-Builder shall put how they plan to inspect the project as part of their quality plan.

In addition to the statements above, when a Project Quality Manager is required within the Key Personnel, the Design-Builder shall establish and implement a Quality Program for Review and Acceptance by the Department. The purpose of the Quality Program is to:

- (a) Ensure that the Design-Builder provides the Department a completed Project that meets Contract requirements;
- (b) Prevent the occurrence of design and construction non-conformances through active and effective monitoring of processes; and
- (c) Assure that the Design-Builder manages the work such that the Department has the ability to substantiate that the requirements of the Contract are being met and substantiate that appropriate payments for the work are made.

The Design-Builder shall develop a Quality Plan that documents and implements the Quality Program. The Design-Builder's Quality Plan shall detail how the Design-Builder will establish and operate its Quality Program management structure independent from design and construction production, and document its procedures pertaining to all aspects of the work. The Quality Plan shall be established and maintained by the Design-Builder such that it provides a Department-auditable system that assures that the Design-Builder's organization complies with Contract requirements pertaining to, at a minimum for those Design-Builder responsibilities stated in **Contract Book 3 (Project Specific Information)**, the following general areas of the work:

- Project Administration;
- Tracking of estimated (planned) and completed-to-date quantities of work;
- Design requirements;
- Materials quality;

- Project progress (scheduling);
- Contract progress submittals for payment;
- Environmental issues;
- ROW requirements;
- Geotechnical Investigations;
- Utility relocation requirements;
- Compliance with Programmatic Plans;
- CSS Approach;
- Proposed Quality Plan staffing and communications organization chart and personnel identification;
- Work Zone safety issues.

The Quality Plan shall establish the organization of the Quality Team and the implementation of all Quality Management activities applicable to the above areas of work, as well as independent auditing by the Design-Builder's Quality Management staff to assess and assure performance compliant with Contract requirements. The Quality Program shall be implemented at all levels of the Design-Builder's and its Subcontractors' organizations for both design and construction functions (including those that supply labor only).

The submitted Quality Plan shall document the following:

- Contract Responsibilities;
- Organization of the Quality Team;
- Independence of the Project Quality Manager from the Design-Builder's production team;
- Processes, procedures and protocols the Quality Team will use to assure quality of the Project in the general areas of work listed above.

The Department will review the Design-Builder's Quality Plan to evaluate whether it meets the guidelines and minimum requirements established by the Department. However, the Department's review of the Quality Plan will not constitute the Department's agreement that it meets these criteria, or relieve the Design-Builder of its sole responsibility for the quality and workmanship of the work performed.

The Department has the right to perform quality inspections and audits of the Design-Builder's management, design, construction, and maintenance activities; the Design-Builder's Quality Management activities; the quality of materials and fabricated products; and the quality of workmanship of the completed Project.

The construction portion of the Quality Plan shall require, among other things, a level of review, inspection, and documentation consistent with those indicated in the Department's Materials and Tests SOP. The Quality Plan shall also require material quality and documentation consistent with the requirements in the Department's Materials and Tests SOP, the Qualified Products List (QPL), and the Department specifications.

- (a) **Quality Plan Submittal** – The Design-Builder shall submit to the Department for Review and Acceptance the Design-Builder's Quality Plan, updated as necessary to meet all Contract requirements, within 30 Calendar Days following the initial NTP and prior to the start of any work.

The designated the Department contact person will be available to meet with the Design-Builder immediately following the initial NTP to discuss the requirements of the Quality Plan and help facilitate the smooth creation, Review and Acceptance of the Quality Plan.

- (b) **Partial Quality Plan Submittal** - If the Design-Builder desires to begin any items of work prior to submittal of the Quality Plan, it must submit a partial Quality Plan covering those items of work.
- (c) **Quality Plan Reviews and Updates** - The Design-Builder shall conduct ongoing management reviews of its Quality Program during the term of the Contract.

As work progresses, the Design-Builder shall update the Quality Plan to reflect current conditions, and shall make such revisions as are necessary to meet the quality standards established in the Contract. Additionally, the Department may identify the need for revisions to the Quality Plan and will notify the Design-Builder of such.

The Design-Builder shall submit a conformed copy of each updated Quality Plan, with revisions highlighted, to the Department for acceptance within 30 Calendar Days of identification of the need for an update or revision. In addition, the Design-Builder shall submit annually (within 12 months of receipt of last acceptance from the Department) either (a) its updated Quality Plan for review by the Department, or (b) a narrative statement that no updates or revisions have been made to the Accepted Quality Plan during that 12-month period, and that all current processes, procedures and protocols are functioning as intended.

### 2.5.1. QUALITY TEAM

The Project Quality Manager shall manage all functions required under the Quality Plan through the Quality Team. The Quality Team shall operate as a distinct and separate quality unit reporting directly to the Project Quality Manager, and may be comprised of suppliers, the Design-Builder, or independent Quality Management personnel. The Project Quality Manager is separate and independent from the Design-Builder's Project Manager, and shall not report directly to the Design-Builder Project Manager or any other Design-Builder personnel on the Project, but shall report to a responsible officer of the Department.

- (a) **Organizational Requirements** – The Design-Builder's Project Quality Manager shall be responsible for overseeing the Quality Program, including Quality Management relating to both design and construction, and for the preparation, implementation and updating of the Quality Plan.
  - The Design Quality Manager and Construction Quality Manager shall report directly to the Project Quality Manager. If separate Quality Managers are required, the responsibilities and requirements will be stated within **Contract Book 3 (Project Specific Information)** as Key Personnel.
  - The Project Quality Manager shall visit the Project Site on a regular basis and be available for consultation with the Department on an on-call basis throughout the term of the Contract. The Project Quality Manager shall attend all weekly progress meetings as detailed in the Quality Plan or as

required by the Department, and such other meetings as the Department may request, including individual meetings between the Project Quality Manager and the Department.

- The Project Quality Manager shall be the primary point of contact to the Department for all issues relating to Design-Builder's Quality Plan (preparation, review, implementation, revision and updating).
- (b) **Authority** - The Project Quality Manager shall have and exercise authority over the work production necessary to assure quality and compliance with Contract requirements. The Quality Team shall have and exercise authority to stop work until the work is brought into conformance with Contract requirements.

### 2.5.2. DESIGN QUALITY ORGANIZATION

**Design Quality Manager** – The Design-Builder shall establish a design Quality Management function and provide a Design Quality Manager to independently review Design Documents received from the Design Manager as specified herein, in other Contract Documents and the Design-Builders Quality Plan prior to requesting Review and Acceptance from the Department. The Design Quality Manager shall evaluate design development processes and procedures and Design Documents in accordance with the Quality Plan, and shall certify to Design-Builder and to the Department that the design complies with all Contract requirements. The Design Quality Manager shall have independent quality review and internal Design-Builder acceptance responsibilities.

### 2.5.3. CONSTRUCTION QUALITY ORGANIZATION

- (a) **Construction Quality Manager** – The Design-Builder shall establish a construction Quality Management function and provide a Construction Quality Manager to oversee, manage, certify and perform construction Quality Management activities as specified herein and in other Contract Documents and the Design-Builders Quality Plan.
- (b) **Construction Inspectors** - All construction processes, procedures, and workmanship shall be inspected by the Design-Builder's Construction Quality Inspectors. Inspection shall include the observations, measurements, and documentation specified in the Design-Builder's Quality Plan and the Contract. Inspection, observations, verification of conformance to specified requirements, measurements, results, non-conformances, and required corrective actions shall be documented on the forms provided by the Department or on Design-Builder's forms acceptable to the Department. Inspection, observation and documentation shall include descriptions of construction activity and location.

### 2.5.4. ENVIRONMENTAL COMPLIANCE PLAN

If any environmental permits are required for the construction of the project, the Design-Builder shall prepare and implement an Environmental Compliance Plan within 30 days of the initial NTP and shall update the plan as needed, as new

fieldwork is completed, and as new or modified mitigation or environmental compliance strategies are developed throughout the term of the Contract.

The Environmental Compliance Plan is part of the Quality Plan and shall be formally Accepted by the Department. New information or modified information, mitigation plans, and compliance strategies developed throughout the term of the Contract and added to the Environmental Compliance Plan shall also be formally Accepted by the Department through the submission of an updated Quality Plan. All permits, clearances, and approvals shall be incorporated into the Environmental Compliance Plan as they are issued by the regulatory Authorities and shall become part of the Quality Plan.

The Design-Builder shall monitor and document work activities to validate full compliance with the environmental requirements.

The Environmental Compliance Plan shall:

- (a) Identify all applicable environmental permits, programmatic agreements, orders, opinions, clearances, and authorizations and their requirements;
- (b) Identify key environmental compliance personnel roles and responsibilities;
- (c) Identify opportunities to avoid and minimize environmental impacts;
- (d) Identify procedures for achieving and documenting environmental compliance;
- (e) Establish procedures for identifying and resolving non-compliance; and
- (f) Establish procedures for emergency response.

In addition, the Environmental Compliance Plan shall address the process and procedures the Design-Builder's environmental team will employ to ensure 100 percent compliance with environmental permits, programmatic agreements (if using), orders, opinions, clearances and authorizations, and protection of the environment. The Environmental Compliance Plan shall also include a schedule for accomplishment of each activity. In addition to the foregoing, the Plan shall include:

- (a) Environmental inspections and investigations;
- (b) Environmental constraints maps;
- (c) Strategies and techniques for avoiding and minimizing environmental impacts early in the design development process and for mitigating on-site those impacts which can not be avoided;
- (d) Strategy for coordinating with the Department;
- (e) Completion of applications for all required environmental permits;
- (f) Plan for implementation of all actions required under environmental permits, orders, clearances, and authorizations obtained by the Department and/or the Design-Builder;
- (g) Plans for mitigating and remediating impacts;
- (h) Environmental compliance team roles, responsibilities and authority;
- (i) Identification of all required environmental permits and approvals;
- (j) Procedures for Compliance Plan implementation;
- (k) Level of anticipated regulatory Authority participation in Project activities

- (l) Environmental controls and mitigation methods such as, but not limited to:
  - (1) Erosion Prevention and Sediment Control and water quality, indicating orange fencing placed around all sensitive areas that will not be affected by the project, so as not to disturb areas..
  - (2) Dust control and air quality.
  - (3) Wetland and wildlife protection.
  - (4) Waterway and aquatic species protection.
  - (5) Cultural resources protection.
  - (6) Noise control.
  - (7) Hazardous material/waste management.
  - (8) Floodplains in accordance with 23 CFR Part 650 Subpart A.
- (m) Procedures for inspection, monitoring, and corrective and preventive actions
- (n) Procedures for final monitoring inspections to assess compliance with permit requirements. Permits can require monitoring for up to 5 years for temporary wetland impacts, relocated streams, pyrite encapsulation, etc.
- (o) Environmental training program processes.

The Design-Builder assumes all legal responsibilities of the permittee for a Design-Build Project (whether or not they obtain the permits) as indicated in the permit that relate to protection of species, "waters of the United States", "waters of the State of Tennessee", and/or a Biological Assessment addressing any potential impacts to endangered, threatened, or otherwise protected species under federal and/or state laws, obtaining concurrence from USFWS and TWRA of any needed Biological Assessment and related species protection activities or techniques pursuant to the legal relations and responsibilities within this **DB Standard Guidance**.

### **2.5.5. SAFETY AND HEALTH PLAN**

The Design-Builder shall perform all work in a skillful manner with due regard to the safety and health of its employees and the public. The Design-Builder shall comply with all laws concerning safety, health, and sanitation standards. The Design-Builder shall not require workers to perform work under conditions that are hazardous, dangerous, or unsanitary. The Design-Builder is required to comply with all safety standards as specified by the Department, FHWA, and OSHA and must provide all appropriate safety equipment to field personnel. Safety guidelines and procedures for archaeological fieldwork can be found in Gorton (1999).

The Design-Builder shall establish and implement a Safety Plan, as required by Contract, for Review and Acceptance by the Department only when a Project Safety Manager is required within the Key Personnel. However, the Design-Builder shall have some type of safety plan for use on a Project whether or not it is required for submittal to the Department for Review and Acceptance.

The Design-Builder shall require its Safety Manager to verify by inspection that the requirements of this **DB Standard Guidance** and the Design-Builder's Safety Plan and safety procedures are being strictly complied with.

The Design-Builder shall implement, review, and update the Safety Plan and introduce a program for assuring that the Project-specific Safety Plan is followed by all workers at all times. The Design-Builder shall coordinate with all Authorities and relevant entities as necessary to ensure compliance with the Safety Plan. The Department may monitor and audit the Design-Builder's safety performance.

The Design-Builder's Safety Plan shall provide for the following:

- Planning, management, and design to avoid hazards;
- Subcontractor safety management;
- Detection of potential hazards;
- Timely correction of hazards;
- Dedication to the protection of the public and the workers;
- Active participation of all persons involved with the Contract;
- Dedicated safety staff;
- Liaison with the Department's monitoring staff;
- Site safety orientation, training, and safety meetings, including a plan for indicating attendance at safety orientation.

The Design-Builder shall ensure that all its employees and those of the Subcontractors at all tiers (including labor-only) fully conform at all times to the provisions of the Safety Plan. In the event that the Design-Builder's employees or its Subcontractors fail to conform to the provisions of the Safety Plan, the Design-Builder shall take appropriate disciplinary measures. Such measures shall include suspension, removal of offending employees from the Project Site, and dismissal. The obligations and requirements of this **DB Standard Guidance** shall be included in the terms and conditions of employment of all employees of the Design-Builder and in all subcontracts at all tiers, including labor-only Subcontractors.

The Safety Plan shall contain a list of the detailed safety procedures to be followed. Safety procedures shall be prepared separately for individual activities and included in appendices to the Safety Plan.

The Design-Builder shall be responsible for ensuring that each Subcontractor employed on the Project complies with this requirement, and the Design-Builder shall provide to the Department a Project-specific Safety Plan covering all work to be done by each Subcontractor prior to the Subcontractor starting work. As an alternate, the Design-Builder may provide a certification that all activities performed by, and workers employed by, Subcontractors will be subject to the Design-Builder's Safety Plan. Submission of the required Safety Plan by the Design-Builder and Review and Comment by the Department shall not be construed to imply approval of any particular method or sequence for addressing health and safety concerns, or to relieve the Design-Builder from the responsibility for adequately protecting the health and safety of all workers involved in the Project, as well as members of the public affected by the Project.

The Design-Builder shall revise the Safety Plan and safety procedures in order to enhance the standards of safety being implemented on site, and to address changes in activities and experiences on the Project Site.

Every 12 months on or near the anniversary of the initial NTP or when the Department deems necessary, the Design-Builder shall review its Safety Plan, and shall consider all sources of information relevant to safety planning and implementation, including accident reports, inspections, audits, suggestions from meetings, and other sources, such as the Department and hazard analysis reviews.

A copy of the current version of the Safety Plan shall be kept on site at each work location while work is being performed, and an appropriate notice shall be posted at each work location.

The Design-Builder's Safety Manager shall be responsible solely for the safety aspects of the Project, and shall not report directly to the Design-Builder Project Manager or any other Design-Builder personnel on the Project, but shall report to a responsible officer of the Department. The Safety Manager shall implement, maintain, and monitor compliance with the Safety Plan and all safety procedures, and shall visit the Project Site on a regular basis and be available for consultation with the Department on an on-call basis throughout the term of the Contract. The Design-Builder shall not commence any work until the Safety Manager has been appointed. No work shall be performed at a work location unless the Design-Builder's Safety Manager or designated deputy is on site.

The Safety Manager and safety staff shall have authority to issue stop-work orders in the event of a perceived safety issue, concern, or observation, suspending work until appropriate corrective action has been taken or the situation has been rectified. If the Design-Builder considers the safety issue, concern, or observation to be of a minor nature, and the Safety Manager concurs, implementation of corrective action may be delayed up to 24 hours, and work resumed.

## 2.6. ADJUSTMENT OF CONTRACT TIME

Contract Time established for the work will be subject to adjustment, either by increase or decrease, affecting the critical path within the approved CPM Schedule beyond the agreed upon the Department Review and Acceptance timeframe for causes beyond the control of the Design-Builder, according to the terms of the Contract. The Department will determine if the time impacts the approved CPM Schedule and adjust the time accordingly by Change Order. After adjustment, the Contract Time will become, and be designated as, the "Adjusted Contract Time."

If the Department anticipates delay during performance of the Contract, and specifies its expected duration in **Contract Book 3 (Project Specific Information)**, the Department will only consider additional delay beyond the stipulated duration in determining whether to adjust Contract Time. Except as specifically stated in **Contract Book 3 (Project Specific Information)**, an adjustment of Contract Time shall be the Design-Builder's only remedy for any delay arising from causes beyond the control of the Design-Builder.

The Department may increase or decrease the Contract Time or the Adjusted Contract Time if Change Orders or Extra Work orders issued actually increase or decrease the amount of time required to perform the work. The Department will promptly inform the Design-Builder of adjustments made to Contract Time pursuant to this subsection and will include the reasons for adjustment.

In the event the Design-Builder believes that additional Contract Time is due, the Design-Builder shall submit to the Department a request within seven (7) Calendar Days of delay to the CPM Schedule critical path for adjustment of Contract Time in accordance with the Department's Standard Specifications Subsection 108.06.

The Department will not grant an adjustment of Contract Time for events that occurred prior to the date of the last revision of the CPM Schedule. The Department will not authorize, nor will the Department pay, acceleration costs incurred by the Design-Builder prior to its submittal of a request for adjustment of Contract Time to which the acceleration costs relate.

The Design-Builder's request for adjustment of Contract Time shall be submitted to the Department including the following, without limitation:

- A schedule analysis based on the current CPM Schedule for each cause of delay, indicating which activities are involved and their impact on Contract completion; and
- An updated CPM Schedule.

## 2.7. SUBMITTALS

Time is of the essence in the Design-Builder's performance of the Contract. All Design-Builder submittals will be based on the approved CPM Schedule.

All submittals date shown within the approved CPM Schedule must be stamped into the Department designated contact office before 12:00 p.m. CST to start the review period that day. If submittals are received after 12:00 p.m. CST, the review period will begin on the following business day. The review period includes only the Department Business Days.

Submittals shall be transmitted in a logical order and in accordance with the submittal schedule. All submittals shall be stamped by the Design-Builder's Construction Project Manager, a Professional Engineer licensed in Tennessee. Delays in the Design-Builder's performance of the work may inconvenience the traveling public, interfere with business and commerce, and increase cost to the Department. It is essential and in the public interest that the Design-Builder prosecute the work vigorously to Contract completion.

## 2.8. FAILURE TO COMPLETE ON TIME

The Department does not waive any rights under the Contract by permitting the Design-Builder to continue to perform the Contract, or any part of it, after the Contract Time or adjusted Contract Time has expired. The proposed number of calendar days submitted by the Design-Builder, or as adjusted by the Department Change Order, shall be used as the basis for the assessment of Liquidated Damages included in the Contract.

According to the Department's Standard Specifications Subsection 108.07, the Department has identified in **Contract Book 3 (Project Specific Information)**, monies to be deducted

from the Design-Builder, not as a penalty, but as Liquidated Damages, the amount(s) specified.

## 2.9. RIGHT TO DO WORK AT DESIGN-BUILDER'S EXPENSE

If the Design-Builder neglects to prosecute the work properly or fails to perform any provision of the Contract in a timely manner, the Department may, after written notice, correct the deficiencies or perform the work at the Design-Builder's expense. Any amounts expended in accordance with this may be withheld from monies due or to become due to the Design-Builder under the Contract in accordance with the Department's Standard Specifications Subsection 107.13.

## 2.10. RESPONSIBILITY FOR WORK

The Design-Builder shall make good any defective work. The Design-Builder shall be responsible according to the Department's Standard Specifications Subsections 105.12, 105.03 and 107.15.

The Design-Builder affirms that all work shall meet all Contract requirements, including applicable technical and specifications, from the date and for the period of time identified in each applicable Specification or elsewhere in the Contract and that all design services shall be performed in accordance with the standard of care specified in the Contract. Any Warranty Bond/period requirement shall be stated within **Contract Book 3 (Project Specific Information)**. If required, the Warranty Bond/period shall survive expiration or termination of the Contract.

The Design-Builder shall restore public roadways, as directed by the Department, to a condition at least equal to that which existed before the work addressed as stated in the Department Standard Specifications Subsections 104.06, 104.08 and 104.11. The cost of cleaning or repairing city streets or public roads will not be paid separately, but shall be included in other items.

## 2.11. CHANGE ORDERS

The proposed Change Order, including time and cost to complete the work, shall be verified as being necessary, cost effective, and in the public's best interest. Before any work on a major change can take place, a Change Order must be signed by all required parties. Before any work on a minor change can take place, the Design-Builder must document the Department approval of the change. Work on a major change is considered as any work that alters the Contract Amount, alters the termini, character or scope of work, or increases the completion date of the original contract time.

Any changes to the original Contract Amount, time or addition of work must be documented by a Change Order and approved by the Design-Builder, their surety, and the Department. The approved Change Order becomes part of the Contract. A plans revision shall be made by the "Engineer of Record" to the plans when an error, omission, correction, or additional

detail is needed. All Change Orders shall be submitted to the Department Alternative Contracting Office for approval.

The Contract Time/Amount may only be adjusted due to any of the following:

- The Department approved scope changes, value engineering cost proposals, directives authorizing ROW reimbursements or authorized Extra work;
- Acts or omissions by the Department or its duly appointed representative that unreasonably interfere with the Design-Builders performance and cause delay of work on the critical path of the CPM Schedule;
- Occurrence of an environmental situation of a significant nature that would require extensive and time-consuming delays in the work;
- Changes in a legal requirement or regulation that becomes effective subsequent to the date of the Contract.

Other than as provided above, the Contract Time/Amount shall not be increased for Contract Adjustments or claimed delay damages. The basis for any allowable price adjustment will be a negotiated amount or, in lieu of negotiations or other agreement, an amount based on the sum of actual labor, material, equipment, insurance, bond, tax, etc. and costs that are deemed direct costs. The Contract Amount shall be adjusted and documented by a Change Order signed by both parties and shall be reflected immediately in the CPM Schedule. Direct costs shall be in accordance with the Department's Standard Specifications Subsection 109.04.

Upon receipt of an executed Change Order, the Design-Builder shall perform the work as modified by the executed Change Order. If the executed Change Order increases the Contract Amount, the Design-Builder shall notify its surety of the increase and shall provide the Department with a copy of any resulting modification to bond documents. The Design-Builder's performance of work pursuant to executed Change Orders shall neither invalidate the Contract nor release the surety. Contract Time adjustments and payment for changes in the work shall be made in accordance with this **DB Standard Guidance**.

### **2.11.1. DEPARTMENT-REQUIRED PLANS CHANGES**

Department-required plans changes to details of construction are inherent in the nature of construction and may be necessary or desirable during the course of Project construction.

Without impairing the Contract, the Department reserves the right to require changes it deems necessary or desirable within the scope of the Project. These changes may modify, without limitation:

- Specifications and design;
- Grade and alignment;
- Cross-sections and thicknesses of courses of materials;
- Method or manner of performance of work;
- Project limits.

or result in:

- Increases and decreases in quantities;

- Changed work, Extra work;
- Elimination of any Contract work;
- Acceleration or delay in performance of work.

### **2.11.2. ALTERATION IN PLANS OR CHARACTER OF WORK**

Differing site conditions, suspension of work ordered, and significant changes in the character of work shall be addressed in accordance with the Department's Standard Specifications Subsection 104.02.

The Party discovering such a condition shall promptly notify the other Party, in writing, of the specific differing conditions before they are disturbed and before the affected work is performed. The Design-Builder shall not continue work in the affected area until the Department has inspected such condition according to this **DB Standard Guidance** to determine whether an adjustment to Contract Amount or Contract Time is required.

Contract Time and/or payment adjustments due to the above conditions, if any, will be made according to this **DB Standard Guidance**.

### **2.11.3. EXTRA WORK**

If directed by the Department through a written order, the Design-Builder shall perform work not included in the Contract but within the scope of the Project according to the Readiness-for-Construction Plans and Specification and all applicable laws.

### **2.11.4. VALUE ENGINEERING CHANGE PROPOSALS**

The Design-Builder may submit written Value Engineering Change Proposals (VECP) to the Department that modifies the Contract for the sole purpose of reducing the total cost of construction in accordance with the Department's Standard Specifications Subsection 104.12. However, the Department will not adopt a VECP that impairs the essential functions or performance characteristics of the Project, including, but not limited to, service life, economy of operation, ease of maintenance, designed appearance, structural integrity, environmental requirements, or design and safety standards.

The Department will determine in its sole discretion whether to authorize a VECP. The Department is not obligated to consider any VECP, and the Department will not be liable to the Design-Builder for failure to authorize or act upon any VECP submitted.

In a case where a VECP involves an adjustment to the ROW (such as a proposal that additional real property be purchased to reduce construction costs), the VECP shall compare:

- (1) The incremental reduction in costs (such as for not designing and building a wall); and

- (2) The costs involved in adjusting the ROW or environmental approvals (which shall be based on the Design-Builder’s additional costs, such as for providing real property acquisition support services, including profit, plus the Department’s additional costs, including land acquisition, appraisals, negotiation, relocation, condemnation, closing, property management, and environmental permitting, specifically including allocated costs of the Department personnel involved in the acquisition);

or (as appropriate) shall compare:

- (1) The incremental reduction in costs (if any) for not acquiring the unnecessary real property; and  
 (2) The additional construction costs to be incurred.

The Design-Builder shall have no claim for any additional costs or delays resulting from the delayed processing or rejection of a VECP, including development costs, loss of anticipated profits, or increased material or labor costs. The Design-Builder is not entitled to share in either collateral or future contract savings. The term “collateral savings” means those measurable net reductions in the Department’s costs resulting from the VECP, including costs of maintenance by the Department, logistics, and the Department -furnished property. The term “future contract savings” shall mean reductions in the cost of performance of future construction contracts resulting from a VECP submitted by the Design-Builder.

Once submitted, the VECP becomes the property of the Department. The Department reserves the right to adopt the VECP for general use without additional compensation to the Design-Builder when it determines that a proposal is suitable for application to other projects.

## 2.12. DISPUTED WORK

Any claims for adjustment and disputes shall be in accordance with the Department Standard Specifications Subsection 105.16 and this **DB Standard Guidance**.

## 2.13. PROJECT PERSONNEL

- (a) The Design-Builder must designate a Project Manager who will be responsible for the administration of the project, including, but not limited to: request for payment, authority to approve changes, and accountability for Contract compliance.  
 (b) The Design-Builder represents that the Key Personnel identified in the Contract meet the applicable minimum qualifications specified in **Contract Book 3 (Project Specific Information)**. The Design-Builder commits to assign the Key Personnel to perform in the capacities identified therein, and represents that the identified Key Personnel shall be available to the extent within the Design-Builder’s control for the duration of the Contract.

The Department may designate other positions as Key Personnel or change the designation of some of the positions as needed at any time during the term of the Contract.

- (1) The Key Personnel shall be capable of reading and thoroughly understanding all Plans and specifications, and shall be thoroughly experienced in performing and supervising the type of work depicted in the Plans and Specifications.
  - (2) Key Personnel shall be located in the Project vicinity for the duration of the Contract, except that the Project Principal and Construction Quality Manager shall be available and present as necessary to fulfill their Project responsibilities.
  - (3) Directory of Key Personnel - Within 15 Calendar Days after the initial NTP, the Design-Builder shall submit to the Department a directory and organizational chart showing all of its Key Personnel. The directory shall be updated throughout the duration of the Contract as changes occur. The directory shall include the names, titles, areas of responsibility, office address and location, office telephone and facsimile numbers, and cellular and/or pager numbers of Key Personnel. The Design-Builder shall provide information sufficient for the Department to contact any of the Key Personnel on a 24-hour basis for the duration of the Contract. The Department shall provide a directory of the Department's Project staff to the Design-Builder.
- (c) The Design-Builder represents that the Subcontractors are duly qualified, available, and have committed the necessary workforce, equipment, and capital to properly and timely perform the work for which they have been contracted. All Subcontractors for the Project shall be approved by the Department for this Project prior to performing any work on the Project. The Department approved Subcontractor form shall be submitted at least seven (7) Calendar Days prior to the first NTP the Subcontractor is to perform work.
- (d) The Design-Builder shall not substitute Key Personnel or Design Professionals without approval from the Department. Notwithstanding the procedures set out herein, the Department will have no obligation to consider or approve a request to substitute, but may, in its sole discretion, do so.
- To add, delete, or substitute Key Personnel or Design Professionals:
- (1) The request must be submitted to the Department at least 30 Calendar Days in advance of any desired change.
  - (2) The Design-Builder shall submit with any request for substitution (a) the name and qualifications of the proposed replacement Key Personnel or Design Professionals; (b) the same selection evaluation information as was specified for inclusion in the SOQ and Proposal; and (c) the reason for the proposed change. If the Department elects to consider the request, the Department, in its sole discretion, will determine whether the proposed substitute is appropriately qualified or otherwise acceptable, and will notify the Design-Builder of its determination whether or not to allow the substitution.
  - (3) The Department, in its sole discretion, will determine whether or not to consider or authorize the replacement of any Key Personnel or Design Professionals, which decision shall be final. Any authorization will be in writing, and the Design-Builder shall not change Key Personnel or Design Professionals except upon receipt of such written consent from the Department. The Department may require additional explanation from the Design-Builder as to the reason for the replacement.

## 2.14. LABOR GUIDANCE

If federal funds are utilized on the Project, in order to properly fulfill the contract, the Design-Builder must conform to the federal and state labor requirements. It is the Design-Builder Project Manager's responsibility to ensure that all requirements regarding labor are met.

### (a) Design-Builder Payrolls

The Design-Builder and each Subcontractor are required to submit one certified payroll to the designated the Department contact person each week in which any contract work is performed in accordance with the Department's Standard Specifications Subsection 107.23, and Required Contract Provisions Federal-Aid Construction Contracts, Section V, Statements & Payrolls, Part 2c. The payroll is due within one week of work being performed. Certified Design-Builder Payrolls received by the designated the Department contact person shall be date stamped. The Design-Builder is responsible for ensuring that all Subcontractors submit payrolls as required. The payrolls shall be retained in the project records.

Each payroll shall have an attached "Statement of Compliance" signed by the Design-Builder or Subcontractor or his/her agent who pays or supervises the payment of persons employed under the Contract (Required Contract Provisions Federal-Aid Construction Contracts, Section V Statements and Payrolls, Part 2d). The "Statement of Compliance" is the Design-Builder's certification that the payrolls are correct, complete, each employee is classified to match the work performed, and that the wage rates conform to the wage rates as set forth in **Contract Book 2 (Design-Build Contract)**. Circular Letter 1273-02 dictates the minimum requirements of a certified payroll.

Federal Form WH347 is an optional form the Design-Builder may use to conform to the Payroll and Statement of Compliance Requirements. Form WH347 can be found at [www.dol.gov](http://www.dol.gov) under the menu selection "By Form".

The first certified payroll for a Design-Builder is due the week following the Design-Builder's start to work. The first certified payroll submitted by the Design-Builder and each Subcontractor shall be thoroughly checked to ensure the payroll is certified, contains the information required, all laborers and mechanics, are paid, at a minimum, the rate specified in the Contract for the associated classification, classifications are accurate and overtime rates are correct.

On a monthly basis, a randomly selected Design-Builder's or Subcontractor's certified payroll should be checked to assure conformance to the requirements. On federally funded projects, the monthly payroll checked should be that of the Design-Builder/Subcontractor of the employee interview to assure continued conformance.

Random payroll checks can also occur if the designated the Department contact person for any reason believes labor requirements are not being met.

The employee classification must agree with the classifications listed in the required wage scales.

The Design-Builder payrolls should be numbered consecutively per each Design-Builder name. A procedure should be established to ensure that all Design-Builder and Subcontractor payrolls are received within the allotted time. Progress Payments may be withheld if payrolls are not received within the allotted time.

If the work of the Design-Builder or Subcontractor is interrupted for a week or more, a statement must be placed on the signature sheet of the payroll “No additional work will be preformed until further notice.” If work stops for a week or more, and is not anticipated, the statement “No work performed, and no work will be performed until further notice.” (See the Department’s Standard Specifications Subsection 107.23)

The last payroll submitted by the Design-Builder or Subcontractor shall be marked “Final”. This is notification that the Design-Builder or Subcontractors work is complete.

If payroll discrepancies are found, the Department will notify the Design-Builder of the discrepancy as soon as possible. The original payroll submitted is not returned to the Design-Builder however, a copy is returned noting the infraction. Corrections are to be made by supplemental payrolls, if required, prepared and submitted in the same manner as the original payroll. Whatever the discrepancy may be, proper correction documentation must be received and approved promptly. The corrections received from the Design-Builder shall be attached to the appropriate related payroll. In the event corrections are not received in a timely manner, monthly Progress Payments may be withheld.

In some cases the necessity of notifying the Department of Labor may be required. However, issues should be resolved at the lowest level possible.

The Design-Builder and Subcontractor payroll files must be made available to the Tennessee Department of Labor and Workforce Development for review as needed.

(b) Design-Builder and Subcontractor Employee Interviews

One labor interview shall be required every month work is performed on a Federal-Aid Project. The designated Department contact person shall conduct random on-the-job interviews to assure that the actual wage is being paid and the employee is properly classified in the work he/she is performing (Circular Letter 1273-03).

If an employee declines a request for an interview, the employee’s name and “Declined to Interview” shall be recorded on the form. This will be considered as a complete interview.

The labor interview is compared to the wage shown on the Design-Builder’s or Subcontractor’s payroll for the corresponding payroll period. If a discrepancy is found, the discrepancy must be documented and resolved immediately.

The Labor Interview form is used to document interview information.

The designated Department contact person will certify that the labor interviews have been conducted by approving the monthly Progress Payment.

## (c) Project Site Bulletin Board (Federal-Aid Contracts)

A project site bulletin board is required on all Federal-Aid Projects. The bulletin board must display required posters as noted in Circular Letter 1273-01, Project Site Poster board.

The Department of Labor and Workforce Development lists on their website all the posters required by the Tennessee State Government and those required by the Federal Government for all Tennessee Employers. The posters may be downloaded off of the website and printed. The posters are located under the Information menu option and posters. The website address is <http://www.state.tn.us/labor-wfd/>

The Small Business Development Office designated Department contact person, can provide the posters/documents that are required in regard to DBEs (Disadvantage Business Enterprises).

## 2.15. ATTESTATION OF ILLEGAL IMMIGRANTS

The Design-Builder and all Design-Builder Subcontractors must certify on a form provided in the **Contract Book 2 (Design-Build Contract)** they are not knowingly utilizing the services of illegal immigrants in the performance of the Contract.

This form is to be submitted by the Design-Builder to the Department no later than January 1 and July 1 each calendar year in which work is performed.

## 2.16. INSURANCE

(a) **Insurance Coverages** - The Design-Builder shall obtain, at its expense, and keep in effect during the term of the Contract, the insurance coverage(s) listed below. The Design-Builder may, however, contractually obligate an appropriate Subcontractor to obtain, at the Subcontractor's expense or at the Design-Builder's expense, and keep in effect during the term of the Contract such types of insurance coverage that the Department approves as types of insurance coverage that may be obtained by appropriate Subcontractors.

- **Commercial General Liability** - The Design-Builder shall maintain Commercial General Liability Insurance covering bodily injury and property damage in a form and with coverage(s) that are satisfactory to the Department. This insurance shall include personal and advertising injury liability and products and completed operations coverage. Coverage shall be written on an occurrence basis. Combined single limit per occurrence shall not be less than the dollar amount indicated in the Contract. The annual aggregate limit shall not be less than the dollar amount indicated in the Contract. The policy shall be endorsed to state that the annual aggregate limit of liability shall apply separately to the Contract. If the Design-Builder's Commercial General Liability Insurance limits are less than the required limits stated in the Contract, the Design-Builder shall obtain Excess or Umbrella Liability Insurance with sufficient limits that when added to the Design-Builder's Commercial General Liability Insurance limits the total combined limits of Commercial General Liability Insurance required for this Project. The above-stated combined single limit per occurrence and the above-stated annual aggregate limit must each be met. Excess or

Umbrella Liability Insurance coverage shall extend to the same perils, terms, and conditions as the underlying Commercial General Liability Insurance coverage.

- **Professional Liability** - The Design-Builder shall assume full responsibility for the quality of the Design-Builder's work and its conformance with all applicable laws, rules, regulations and orders governing said work. The Design-Builder shall hold harmless and indemnify the Department for all claims and damages which result from the failure of the Design-Builder to perform its duties in conformance with the reasonable standard of care as applicable to design professionals within the State of Tennessee. The Design-Builder shall provide the Professional Liability (Errors and Omissions or "E&O") Insurance through his Design consultant.
  - **Railroad's Protective Public Liability and Property Damage Liability Insurance and other required Railroad Insurance (if a railroad is on a federally funded project)**- The Design-Builder shall contact the railroad directly with questions concerning this requirement and any other railroad required specific insurance. All insurance required by the railroad- shall be carried until all work required to be performed under the terms of the Contract has been satisfactorily completed within the limits of the right-of-way of the railroad, as evidenced by the formal acceptance by the Department. Insuring companies may not cancel insurance except by permission of the Department and railroad insured, or on thirty (30) days written notice to the Department and the railroad.
- (b) **Notice of Cancellation or Change** - The Design-Builder shall not cancel, change materially, or take any action showing intent not to renew the insurance coverage(s) without 30 days' advance written notice from the Design-Builder or its insurer(s) to the Department. The Design-Builder shall be responsible for ensuring that insurance coverage(s) obtained by an appropriate Subcontractor, as permitted by the Department, are not cancelled, changed materially, or have any action taken by the Subcontractor showing intent not to renew the insurance coverage(s) without 30 days' advance written notice from the Design-Builder or the insurer(s) to the Department. Any failure to comply with the reporting provisions of this insurance shall not affect the coverage(s) provided to the Department, county, city, or other applicable political jurisdiction, or to the Department's governing body, board, or commission and its members, and the Department's officers and employees.
- (c) **Certificate(s) of Insurance** - As evidence of the insurance coverage(s) required by this Contract, including those permitted by the Department to be obtained by an appropriate Subcontractor, the Design-Builder shall furnish certificate(s) of insurance to the Department no later than the effective date of the Contract. As evidence of insurance coverage(s) required by this Contract but permitted by the Department to be obtained by an appropriate Subcontractor, the Design-Builder shall furnish certificate(s) of insurance to the Department for Review and Comment prior to the commencement of work by Subcontractors. The Department will review the certificate(s) for compliance with the Contract requirements. The Certificate(s) shall specify all of the parties who are additional insureds and must include the State of Tennessee as an additional insured. The Design-Builder shall obtain, or ensure that the appropriate Subcontractors obtain, insurance coverage(s) required under this Contract from insurance companies or entities acceptable to the Department and authorized to issue insurance in the State. The Design-Builder, or the appropriate Subcontractor, but not the Department, shall be

responsible for paying all deductibles, self-insured retentions and/or self-insurance included under these provisions.

## 2.17. INDEPENDENT CONTRACTOR STATUS

The service or services to be rendered under the Contract are those of an independent contractor. The Design-Builder and all Subcontractors shall not become an officer, employee, or agent of the State as a result of entering into the Contract for this Project.

## 2.18. ADJUSTMENTS AND DISPUTES

This section details the process through which the Parties agree to resolve any disagreement concerning additional compensation or concerning a combination of compensation and Contract Time. These provisions do not apply to disagreements concerning only Contract Time or return of Liquidated Damages. The Department will not consider direct disagreements or disputes from Subcontractors, materials suppliers, or any other entity not a party to the Contract.

When disagreements occur, the Design-Builder shall first pursue resolution through the Department of all issues in the dispute, including, without limitation, the items to be included in a written notice. If the discussion fails to provide satisfactory resolution of the disagreement, the Design-Builder shall follow the dispute procedures outlined in the Department's Standard Specifications Subsection 105.16. If the Department denies all or part of the Design-Builder's dispute, and the Design-Builder desires to further pursue the issues, the Design-Builder must submit an additional claim for processing.

## 2.19. SUBCONTRACTING OF WORK

The Department shall approve all 1<sup>st</sup>, 2<sup>nd</sup>, or lower tier subcontracts. All approved Subcontractors shall be on the Department Pre-Qualified List located at [www.tdot.state.tn.us/construction](http://www.tdot.state.tn.us/construction) or on the Design consultant listing at <http://www.tdot.state.tn.us/consultantinfo.htm>. An approved and executed subcontract form must be on file in the Project records before a Subcontractor can begin work. An approved and executed subcontract form discloses all of the required signatures of the appropriate officials.

### (1) **1<sup>st</sup> Tier Subcontract**

The Design-Builder shall submit to the Department a completed Subcontract form for each 1<sup>st</sup> Tier Subcontractor.

### (2) **2<sup>nd</sup> tier or greater Subcontracts shall be approved by the Department**

The 1<sup>st</sup> Tier Subcontractor shall submit to the Department a completed 2<sup>nd</sup> Tier Subcontractor-contract form as deemed necessary.

### (3) **Subcontracts involving Disadvantaged Business Enterprises**

If the contract has a DBE Goal, a copy of the Department Approved Subcontractor-contract agreement between the Design-Builder and the DBE Subcontractor must be in the project records before the first estimate can be paid. Additional information

regarding Disadvantaged Business Enterprises is located in the Civil Rights Section of this **DB Standard Guidance**.

The Design-Builder may sublet work in accordance with Department's Standard Specifications Subsection 108.01, as allowed in 23 CFR 635.116. However in the case of a Design-Build Project, the following paragraph will be added as a supplement to Subsection 108.01:

“For Design-Build projects, the Design-Builder is not limited to performing work with their own organization amounting to not less than the 30% of the total original contract cost. At the discretion of the Department, a minimum percentage of work that must be done by the Design-Builder may be established in the Contract. For the purpose of this section, the term Design-Builder may include any firms that are equity participants in the Design-Builder, their sister and parent companies, and their wholly owned subsidiaries.”

In no case shall the Design-Builder sublet more than the stated percentage of the original Contract Amount of a percentage stated in the **Contract Book 3 (Project Specific Information)**.

## CHAPTER 3: POST AWARD SUBMITTALS

- The Design-Builder must submit to the Department Construction Office the subcontract form of any Subcontractor the Design-Builder intends to utilize on the Project for Approval, including the lead design firm. An approved and executed form must be on file with the Department prior to the Subcontractor beginning work. If the subcontract involves a DBE, all information stated within Chapter 1 must be on file before the first estimate can be paid.
- The Design-Builder shall use the preliminary CPM Schedule submitted with the Proposal as a foundation to prepare a Project CPM Schedule (time and cost-loaded) and shall submit it to the Department for Review and Acceptance. Acceptance of the Project CPM Schedule shall be a condition of starting any work. This will be necessary at the Post Award Meeting.

The scheduling software employed by the Design-Builder shall be compatible with the current and any future scheduling software employed by the Department. The Department's current software in use is Primavera Project Manager (v 5.0). The software shall be compatible provided in an electronic file version of the Project Schedule that can be loaded or imported by the Department using the Department's scheduling software with no modifications, preparation or adjustments.

The Design-Builder shall submit a single hard copy of the CPM Schedule in full-size color plot sheets, along with a backup disk of the schedule in electronic format. The CPM Schedule shall include a separate narrative report which describes, in general fashion, the Design-Builder's proposed methods of operation for designing and constructing the major portions of the work required by the Contract. The schedule narrative shall describe the general sequence of design and construction, the proposed Critical Path of the Project, and all Milestone Schedule Deadlines. The CPM Schedule shall include all major activities of work required under the Contract, in sufficient detail to monitor and evaluate design and construction progress, from commencement of the work to Final Acceptance of the work. The CPM Schedule shall also include activities, if applicable to the Contract, for property acquisition, utility adjustments, permit acquisitions, and interfaces with other projects, localities, municipalities and other governmental entities. For each major activity, Design-Builder shall indicate the duration (in Calendar Days) required to perform the activity and the anticipated beginning and completion date of each activity. In addition, the CPM Schedule shall indicate the sequence of performing each major activity and the logical dependencies and inter-relationships among the activities. The CPM Schedule shall include a listing of all submittals as called out in the Contract.

With the exception of activities relating to environmental approvals by governmental entities, each activity depicting the Design-Builder's operations shall have duration of not less than one Day. All activities shown in the schedule, with the exception of the first and last activities, shall have a minimum of one predecessor and a minimum of one successor activity. Float shall not be considered as time for the exclusive use of or benefit of either the Department or the Design-Builder but shall be considered as a jointly owned, expiring resource available to the Project and shall not be used to the financial detriment of either party. Any method utilized to sequester float calculations will be prohibited without prior approval of the Department. Any schedule, including the CPM Schedule and all updates

thereto, showing an early completion date shall show the time between the scheduled completion date and the applicable Milestone Schedule Deadline as "Project Float."

- Immediately after the initial NTP, the Design-Builder shall submit any revisions to the ROW Acquisition sheets to the Department Alternative Contracting Office (or their designee).

## **CHAPTER 4: PUBLIC INVOLVEMENT PROCESS**

Using the Department’s Public Involvement Plan (PIP) as a guide, the Design-Builder shall submit a public involvement proposal and schedule to the Department for Review and Acceptance. If public informational meeting dates and/or times change, the Design-Builder shall submit a revised schedule to the Department. Consideration of the public involvement process to be implemented for any transportation effort will begin at the earliest stage of design and construction for the Project. Projects vary in the length of time required for design and construction, and projects vary greatly in size. The public involvement process can be different for each effort, and the level of public involvement implemented can vary.

Public involvement program activities associated with each category are defined within the PIP in terms of minimum requirements and potential enhanced activities. Those defined as “minimum requirements” meet or exceed the federal requirements for public involvement. They reflect the minimum level of effort acceptable to the Department on all projects. Enhanced activities will be considered critical to implement when there is an indication that additional public involvement is needed for any project, such as particularly divisive special interest groups within a project area that would require individual attention. All levels of public involvement will include reviewing demographic information to identify any underserved or special audiences within a project area, and determining the appropriate level of outreach.

The Design-Builder shall certify to the Department Alternative Contracting Office the dates and times of meetings that were held. A record shall be kept of all public meetings and the comments received and the disposition of those comments shall be collected and made a part of the Project record.

If required by the Contract, the Design-Builder will assemble a multidisciplinary team to assess the impact of the proposed project on the public.

On projects located within sensitive areas, the Department may require additional public involvement from the Design-Builder.

# **CHAPTER 5: ROADWAY DESIGN PROCEDURES, INCLUDING STRUCTURAL DESIGN**

## **5.1. DEPARTMENT REVIEW POINTS**

Upon the initial NTP to the Design-Builder, the Design-Builder is required to coordinate project development with the designated Department contact person in the design development stage.

The Design-Builder must not proceed with project development for which they expect reimbursement for Design Plans requiring the Department Review and Acceptance until it completes the Post Award Meeting.

## **5.2. DESIGN**

### **5.2.1. DESIGN POLICIES AND PROCEDURES**

The Design-Builder shall use the following roadway design policies and procedures as noted below.

- (1) Standard Roadway Drawings, the Department Design Division, current edition.
- (2) Standard Structures Drawings, the Department Structures Division, current edition.
- (3) Roadway Design Guidelines, the Department Design Division, current edition with Instructional Bulletins.
- (4) Survey Manual, the Department Design Division, current edition.
- (5) Design Division Drainage Manual, the Department Design Division, current edition.
- (6) Structural Memorandums (SMO), the Department Structures Division, current edition.
- (7) Design Procedures for Hydraulic Structures, the Department Structures Division, current edition.
- (8) Work Zone Safety and Mobility Manual, the Department Design Division, current edition.
- (9) Standards for Accessible Design, 28 CFR Part 36, Appendix A.
- (10) Manual on Uniform Traffic Control Devices (MUTCD, FHWA, current edition).
- (11) A Policy on Geometric Design of Highways and Streets, AASHTO, current edition with addenda.
- (12) Guide for the Development of Bicycle Facilities, AASHTO, current edition with addenda.
- (13) Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals, AASHTO, current edition with addenda.
- (14) Traffic Design Manual, current edition.
- (15) Roadside Design Guide, AASHTO, current edition.
- (16) Highway Capacity Manual, TRB, current edition.

- (17) Standard Specifications for Highway Bridges, AASHTO, current edition with addenda.
- (18) LRFD Bridge Design Specifications AASHTO, current edition with addenda.
- (19) Hydraulic Engineering Circulars, FHWA, current edition.
- (20) Flood Insurance Studies, FEMA, current edition.

For all Design-Build projects; the Contract and/or Plans shall not contain any proprietary items, unless specified in accordance with 23 CFR 635.411 and approved by the Department.

As permitted under 23 CFR 625.3 (E), the Roadway Design Policies and Procedures referenced above do not apply for traffic engineering and safety projects such as signing, marking, signalization, roadway lighting, and traffic barriers which will include very minor or no roadway work. This will permit implementation of projects addressing safety and operational concerns in a timely manner without requiring design exceptions for those elements of the roadway that are beyond the scope of purpose and funding of these types of projects.

### **5.2.2. STAGES OF DESIGN DEVELOPMENT**

The Design-Builder shall hold Design Reviews and conform to the following five (5) stages of design development:

- Definitive Design;
- Interim designs;
- Readiness-for-Construction Plans, Specification and quantity estimates;
- Working Plans;
- As-Built Plans.

The Definitive Design and Readiness-for-Construction Plans can be combined and/or submitted in reasonable phases or segments to expedite progress. A separate NTP will be issued for each RFC phase or segment.

The general purpose of each stage of design development and Design Review is to:

- Verify that the design complies with all Contract requirements; and
- In the case of reviews of Working Plans, enable construction to continue.

The Design-Builder shall submit to the Department design notes and computations to document the design conclusions reached during the development of the construction plans.

The design notes and computation sheets shall be fully titled, numbered, dated, indexed, and signed by the lead designer and the checker. Computer output forms and other oversized sheets shall be folded to a standard size 8½" x 11". The data shall be in a hard-back folder for submittal to the Department. At the project completion, a final set of design notes and computations, signed by the Design-Builder, shall be submitted with the record set of plans.

### **5.2.3. STRUCTURES**

Final hydraulic design and preliminary and final structural plans stamped by an engineer licensed in the state of Tennessee will be prepared by the Design-Builder and submitted to the designated Department contact person prior to submission of the Readiness-for-Construction plans. A copy of the letter transmitting these plans should be sent to the Department Alternative Contracting Office. These plans will be transmitted to the designated Structures Division Department person for Review and Acceptance and the Department will transmit to FHWA for review.

### **5.2.4. BRIDGES**

Any grade or drainage structure over 20 feet in length measured along the roadway centerline. For span structures, structure length should be measured from back to back of the back walls of the abutment or from pavement notch to pavement notch. For culverts, structure length is measured between inside faces of the exterior walls.

Materials for bridge construction shall be only those approved by the Department Materials and Test Division for use on the Department projects. Timber bridges or components shall not be used, unless approved by the Department. All bridge decks must be constructed using reinforced or pre-stressed concrete.

For span bridges, a preliminary bridge layout and a hydraulic layout sheet, if necessary, shall be submitted to the designated Department contact person for Review and Acceptance prior to purchase of any ROW. A copy of the letter transmitting the layouts should be sent to the Manager of the Department Alternative Contracting Office. Multiple crossings on a single road project shall be submitted together for Review and Acceptance to the Department.

All bridge rails must be specified according to current the Department standards or be rails meeting NCHRP 350 standards at the appropriate test level.. Structural design will be by Load Resistance Factor Design (LRFD) per AASHTO Bridge Design Specifications, current edition.

Construction of span and box bridges and culverts will be done by procedures in the Department Standard Specifications for Road and Bridge Construction, current edition. Box and slab type bridges shall be specified according to the Department Structures Division standard drawings or designed to AASHTO guidelines. Pre-cast concrete boxes and three sided pre-cast concrete structures shall be specified according to manufacturer plans and specifications and shall be only those approved for use by the Department for roadway projects. Any greenways, bicycle or pedestrian lanes shall be accounted for in bridge design per the Department's Bicycle and Pedestrian Policy.

Shop drawings will be required for all items identified in the Department Standard Specifications Subsection 105.02.

### **5.2.5. GRADE CROSSINGS**

A grade crossing is bridge over a road or railroad. The minimum bridge lengths for grade crossings will be the minimum required to accommodate the road or railroad plus the fill slopes (usually 2:1 unless otherwise specified by Geotechnical Study or in the RFP), ditches, and sidewalks, if required.

The minimum horizontal clearance for road grade crossings shall be a distance equal to the width of shoulders plus ditches with the exception of Interstate Routes and State Routes grade crossings which shall be 30'-0" from the outside of the travel lane to any substructure. A minimum vertical clearance of 14'-6" shall be provided across the full extent of the required horizontal clearance for local road grade crossings and 16'-6" for state route and interstate grade crossings.

For railroad grade crossings the minimum horizontal clearance shall be 25'-0" measured from the top of the rail elevation to any substructure or fill slope and the minimum vertical clearance shall be 23'-0" above the top of rail.

### **5.2.6. HYDRAULIC CROSSINGS**

All hydraulic design for structures receiving a 50 year flow of less than 500 cubic feet per second (cfs) shall be done according to the Department Design Division Drainage Manual and for structures receiving a 50 year flow of 500 cfs or greater shall be done according to the Department Design Procedures for Hydraulic Structures (Tennessee Hydraulic Memoranda (THM)). All hydraulic design shall also comply with 23 CFR Part 650 Subpart A.

All hydraulic designs shall be prepared using the U.S. Army Corps of Engineers Hydrologic Engineering Centers River Analysis System (HEC-RAS) software for Review and Acceptance prior to submission of the Readiness-for-Construction plans. A copy of the letter transmitting this file shall be sent to the Department Alternative Contracting Office.

Where Federal Emergency Management Agency (FEMA) Flood Insurance Studies are available for a hydraulic crossing, the flow information and water surface profile starting elevations will be used unless a hydraulic or hydrologic study is performed to determine if other data is more appropriate. If there is no FEMA study available for the Project, then other data sources shall be used as outlined within the Department Design Procedures for Hydraulic Structures. No backwater may be produced by an encroachment on the designated floodway over and above that already existing when the floodway was established by the local government. (Note: If this requirement is impractical, the Department may acquire flood easements for the property affected by the backwater or make appropriate improvements in conveyance in the floodway or appeal to FEMA through the local community to redesignate the limits of the floodway (44 CFR 60.3 and 44 CFR 65.12).

All hydraulic designs shall demonstrate that flooding conditions will be at least no worse than existing conditions. A scour analysis will be required according to

procedures in the Federal Highway Administration (FHWA) publication Hydraulic Engineering Circular (HEC) HEC-18 for all span bridges in the Department Region 4 (west Tennessee) and any other part of the state where foundations will not be placed on bedrock.

Bridge deck drainage analysis will be performed according to procedures in the FHWA publication HEC-21 for all span bridges unless the Department Standard 11-1 (Open) bridge rail is used.

An electronic hydraulic design file, including all layouts and design analyses, stamped by a Professional Engineer licensed in the state of Tennessee shall be submitted to the designated Department contact person. This file shall include a hydraulic model with detailed design documentation.

### **5.2.7. RETAINING WALLS**

Retaining walls for bridge or roadway projects shall conform to the Department retaining wall policy.

### **5.2.8. PROJECT SURVEY**

The survey for the project is to be tied to the Tennessee Geodetic Reference Network. Project plans shall show the horizontal datum, vertical datum, and the datum adjustment factor on all sheets that contain survey information. Control points, benchmarks, horizontal controls, and vertical controls are to be shown in the project plans as well. All surveys shall comply with the most current version of the Department's Survey Manual and the Department's Roadway Design Guidelines, except as modified by the Contract.

### **5.2.9. REGULATORY PERMITS**

The Design-Builder will obtain and pay for the regulatory permits when they are required by applicable laws, the Plans, or Contract specifications, unless otherwise specified in **Contract Book 3 (Project Specific Information)**. These costs shall be included in the Contract Amount. If the Department provides the permits within **Contract Book 3 (Project Specific Information)**, the Department will transfer all permits obtained to the Design-Builder. See the Department's Roadway Design Guidelines for general guidance.

It is understood and agreed that the Design-Builder is responsible for performing Supplemental Ecological Boundary Studies as required under Ecological Studies Scope of Work specified in Appendix B. All Department supplied and supplemental ecological information shall be included and labeled on plans.

It is also understood and agreed that the Design-Builder assumes all responsibilities of the permittee as indicated in the permit that relate to protection of the "waters of the United States" and/or "waters of the State of Tennessee" pursuant to the following:

1. Section 404 of the Federal Clean Water Act (33 U.S.C. §1344), and all implementing regulations, including without limitation regulations of the U.S. Army Corps of Engineers governing permits for discharges of dredged or fill material into waters of the United States in 33 CFR Part 323;
2. The Tennessee Water Quality Control Act (T.C.A. §69-3-101, et seq.) and all implementing regulations, including without limitation the Rules of the Tennessee Department of Environment and Conservation governing NPDES permits in Chapter 1200-4-10, and Aquatic Resource Alteration Permits in Chapter 1200-4-7; Class V Injection Well Permits for work in or near sinkholes;
3. Section 26a of the TVA Act of 1933 as amended (49 Stat. 1079, 16 U. S. C. sec. 831y1.) and all implementing regulations, including without limitation the regulations of the Tennessee Valley Authority governing construction in the Tennessee River System in 18 C.F.R., Part 1304;
4. The Tennessee Wildlife Resources Agency Reelfoot Lake Watershed Management permit program (T.C.A. Title 70, Chapter 5), and all implementing regulations, including without limitation regulations authorizing any activity, practice, or project which has or is likely to have the effect of diverting surface or subsurface water from the Lake or have the effect of draining or otherwise removing water from Reelfoot Lake;
5. Construction, reconstruction, and/or repair of bridges over navigable waterways could require a United States Coast Guard Bridge Permit. The regulations governing Coast Guard Bridge Permits are codified in 33 CFR 114-118. Additional information regarding this program can be obtained from the Coast Guard Office of Bridge Administration.

Additionally, for construction activities on Design-Build projects, the Design-Builder will be responsible for implementing the requirements of the Statewide Storm Water Management Plan (SSWMP) or elements of the SSWMP resulting from the implementation plan and is required to attend all training required by the SSWMP.

Permits may be modified by regulatory agencies during the course of performing the work under the Contract. Therefore, wherever the term "order," "permit," "opinion," "programmatic agreement," or "authorization" is used in the Contract, it is intended to refer to the current version in effect at the time the event governed by it takes place.

An emphasis shall be placed on maintaining the construction project in regard to environmental requirements. Construction Projects require various permits to allow construction work to be performed.

A TDEC permit may also be required when activities such as core sampling, seismic exploratory operations, soil surveys, soil sampling, and historic resources surveys are within waters of the state. This permit is also required for placement and operations of scientific measurement devices.

Various Programmatic Environmental Documents are as follows:

- FHWA – NEPA Document, Programmatic Categorical Exclusion Agreement.
- SHPO MOUs for:
  - Miscellaneous Improvements;
  - Improvements Made under the Highway-Rail Grade Crossing Program;
  - Intersection Improvements;
  - Improvements Made under the Pavement Management Program;
  - Improvements for Roadside Safety;
  - Culvert Repair and Replacement under the Small Structures Program;
  - Bridge Repairs.
- US Fish & Wildlife Service MOA for:
  - Bridge repair projects except over certain high-quality streams;
  - Turning lane projects;
  - Traffic signals;
  - Guardrails;
  - Railway signals & signs;
  - Maintenance of roadway ditches & catch basins.
- TWRA - pending agreement about stream access points adjacent to bridge projects.
- TESA – Multiagency agreements.

Preparation of complete permit packages will be the responsibility of the Design-Builder. The Form G shall be included with all permit application package. The Design-Builder will act as an authorized representative for the Department for permit purposes only. Plans detailed enough showing the impacts to "waters of the United States" and/or "waters of the State of Tennessee" shall be submitted with an application letter describing in detail the impacts. Permit sketches for individual permits (IARAP or I404) shall be prepared utilizing the Department template for permit sketches. If any agency rejects or denies the permit application, it is the Design-Builder's responsibility to make whatever changes necessary to ensure the permit is approved. The Design-Builder will be responsible for preparing designs and proposing construction methods that are permissible. All permits required for a particular construction activity will be acquired prior to commencing the particular construction activity. Delays due to incomplete permit packages, agency rejection, agency denials, agency processing time, or any permit violations will be the responsibility of the Design-Builder, and will not be considered sufficient reason for time extension.

The Department, at its discretion, may make a determination to grant a non-compensable time extension for any impacts beyond the reasonable control of the Design-Builder in securing permits in an approved Change Order. Furthermore, as to any such impact, no modification provision will be considered by the Department unless the Design-Builder clearly establishes that it has continuously from the beginning of the Project efficiently and effectively pursued the securing of the permits including the utilization of any and all reasonably available means and methods to overcome all impacts.

All substantive contact with regulatory Authorities by the Design-Builder shall be conducted by the appropriate, qualified environmental task lead or the Environmental Manager. The Design-Builder shall fully review guidance material available on the regulatory Authorities' Internet sites before contacting the Authorities. The Design-Builder shall not contact the regulatory Authorities before the Department's Acceptance of the Environmental Compliance Plan without prior approval of the Department.

If a NPDES Construction General Permit (CGP) is required for the Project, the Design-Builder shall prepare a Storm Water Pollution Prevention Plan (SWPPP) utilizing the the Department SWPPP template and a Notice of Intent (NOI). The template shall be used as a starting guide to SWPPP preparation and the Design-Builder is responsible for complying with all requirements of the CGP. The SWPPP shall include the EPSC plans for application of coverage under the CGP. The SWPPP and NOI shall be submitted along with the Design-Builder's Certification (Finding of the EPSC plan) at least 30 Business Days prior to beginning construction activities. Once a NOC is received by the Design-Builder, the EPSC plans shall be kept current for all phases of construction. Any changes in scope subsequent to submitting the SWPPP for coverage under the CGP shall be submitted to TDEC for their records.

#### **5.2.10. WILD AND SCENIC RIVERS**

The Design-Builder must determine if federally-designated Wild and Scenic Rivers, or those under study for designation, are in the project area. Rivers are designated under the federal Wild and Scenic Rivers Act. As of 2006, no Tennessee rivers are under study and only one river has been designated: the Obed Wild and Scenic River, in Morgan and Cumberland counties in East Tennessee on the Cumberland Plateau.

If a project has the potential to adversely impact the Obed River, or any rivers added to the listing for study or through designation, early coordination must be undertaken with the US Department of Interior, National Park Service. Potential effects of the project must be analyzed; adverse effects include alteration of the free-flowing nature of the river and alteration of the setting or deterioration of the water quality. If adverse effects are identified, contact the designated Department contact to start consultation with the NPS to avoid or mitigate the impacts. In addition, publicly-owned waters of designated rivers are subject to Section 4(f), and public lands adjacent to designated rivers may be subject to Section 4(f). For each alternative that takes land, coordination with the NPS will provide information on the management plan, specific affected land uses and any necessary 4(f) coordination.

Tennessee also has Scenic Rivers, which have been designated under Tennessee Scenic Rivers Act of 1968. Also High Quality Streams and Wetlands (Tier II or "Exceptional Tennessee Waters").

The Design-Builder shall provide monthly environmental status and compliance reports to the Department. In addition, the Design-Builder shall arrange and schedule bi-weekly meetings, depending on the level of permitting and construction activity in or adjacent to environmentally sensitive areas with the Department to review Project compliance with permits and approvals. Meeting minutes shall be prepared and distributed within five (5) Business Days of the meeting.

### **5.2.11. DESIGN DOCUMENTATION**

- (a) Progress Tracking – The Design-Builder shall include engineering and design progress and changes in its CPM Schedule (including work on any design change) in the Monthly Progress Report. The Design-Builder’s progress tracking for design shall reflect a mutually agreed-upon percent complete for Milestones achieved.
- (b) Design Quality Records – If a Quality Manager is required by Contract, the Design-Builder shall maintain an auditable record of all Quality Plan procedures. An independent auditor must be able to determine by reviewing the documentation if all procedures included in the Quality Plan and required herein have been followed. The Design-Builder shall submit all monitoring reports and records of checks and reviews within seven (7) Calendar Days of the completion of the applicable review.
  - (1) The Design Manager shall be responsible for preparing and maintaining the following design quality records.
    - a. Monitoring reports of all design issues and review comments resulting from the scheduled and additional checks and reviews, including final resolution of those issues and comments.
    - b. A log of design Non-Conformance Reports and/or notices indicating date issued, reasons, status or resolution, and date of resolution.
    - c. Daily records of design activities, using forms acceptable to the Department.
  - (2) The Design Quality Manager shall be responsible for preparing and maintaining the following design quality records:
    - a. Monthly Progress Report to the designated the Department contact by the third (3<sup>rd</sup>) Business Day of the following reporting month that includes each of the following:
      - 1. Summary of Design Reviews conducted;
      - 2. Nonconforming work and current status and disposition (based on design non-conformance log); and
      - 3. Submissions from the Design-Builder and status.
    - b. Final Design Report - Upon completion of the Readiness-for-Construction Plans and Specifications, the Design Quality Manager shall notify the Design-Builder, with a copy to the designated the Department contact, of any outstanding monitoring report issues or unresolved review comments or nonconformances.

## 5.2.12. DESIGN/DESIGN QUALITY CHECKS AND CERTIFICATIONS

- (a) Design Checks – The Design-Builder shall require its Designer to check all Design Documents (Working Plans, Plans, Design-Builder Specifications, calculations, memoranda, and reports) as they are produced, to confirm compliance with all Contract requirements. The Design Manager shall conduct such independent reviews and evaluations as may be necessary to enable him/her to certify that the Design Documents have been checked per Contract requirements and if required, the Design-Builder’s Quality Plan.
- (b) Independent Design Checks – The Design-Builder’s Design Review shall include independent design checks. The Design-Builder shall carry out independent design checks of Plans and Design-Builder Specifications for permanent components and major temporary components, and for effects of temporary components on the permanent components. Such checks shall be performed by senior engineers employed or retained by the Design-Builder who are not involved in the production of the design documents being reviewed, and who have qualifications and experience equal to or greater than the Responsible Engineer for the design being checked.

Independent design checks shall comprise design assessment and analytical checks, as specified herein.

- (1) Design Assessment - Design assessment constitutes a review of the Design Document for general compliance with all Contract requirements, taking into consideration the proposed method of construction, and shall cover each of the following areas:
  - Loads;
  - Legal Requirements and standards;
  - Methods of analysis;
  - Computer software and its validation;
  - Interface requirements;
  - Maintenance requirements;
  - Materials and material properties;
  - Durability requirements;
  - Fatigue performance;
  - Hydrology; and
  - Design flows.
- (2) Analytical Check - Independent design checks shall include an independent analytical check using independently-derived calculations (without reference to Designer’s calculations) to evaluate the structural adequacy and integrity of critical structural members as designed. This shall include, but is not limited to the following:
  - The structural geometry and modeling
  - Material properties

- Member properties
- Loading intensities
- Structural boundary conditions

(c) Design Quality Manager Certifications – If required by Contract, the Design Quality Manager shall conduct all necessary reviews to enable him/her to issue written certification in accordance with the requirements specified herein.

All design and construction documents shall be prepared using the English system, unless otherwise specified in the Contract.

### **5.2.13. SOILS AND GEOLOGY**

During the design phase of a project, the Design-Builder shall investigate the geotechnical aspects of the general roadway alignment chosen for the Project. Surface geology recognizance and mapping, drilling of the subsurface soil and bedrock information, and sampling the soil and bedrock for engineering properties are conducted. A preliminary geotechnical study (for soils and geology) will be undertaken by the Design-Builder to identify geotechnical features that may affect the Project's design. The study will seek to identify topography, soil types, subsurface formations, and areas of unstable materials, caves and sinkholes, as well as any special concerns, such as acid producing rock. The Design-Builder shall provide the Department with a narrative report covering issues on the project and recommendations, including cut and fill slope design, foundation recommendations, special notes and mitigation of problem areas for the Department's Review and Acceptance. Technical drawings are also included. Special concerns such as acid-producing rock shall be avoided by design if at all possible.

See the Department Geotechnical website at [www.tdot.state.tn.us/materials/geotech/consultantinfo.htm](http://www.tdot.state.tn.us/materials/geotech/consultantinfo.htm) for General Guidelines for the Soils and Geological Survey Report.

The Design-Builder shall be involved in geotechnical inspection of footing condition, bridges and retaining walls, wet or soft soil conditions encountered, unstable cut slopes or potentially dangerous rock fall areas, encapsulation of acid producing rock, sinkholes that occur during construction activity, and problems with the construction of geotechnical related retaining walls (MSE walls, tieback walls, soil nail walls, pile lagging walls, etc.).

See the Department Geotechnical website at <http://www.tdot.state.tn.us/materials/geotech/> for any additional information, drawings or guidance.

## **5.3. DESIGN REVIEWS, MEETINGS CONFERENCES AND PLAN REQUIREMENTS**

### **Pre-Design Meeting**

A maximum of 15 Calendar Days or at the Post-Award meeting prior to beginning Design Services, unless otherwise authorized in writing by the Department, the Design-Builder shall meet with the designated the Department contact person at a time mutually agreed upon. Among other matters, the purpose of the meeting will be to establish the level of detail to be required for measuring progress with regard to those design Pay Items referenced in this **DB Standard Guidance**.

- (a) The Design-Builder shall include the Design Review schedule in the CPM Schedule, which shall be reviewed monthly until the design work is complete. The Design Review schedule shall indicate all independent Design Reviews required to be performed by the Design Quality Manager prior to Design Reviews with the designated the Department contact.
- (b) Design Review Notices – The Design-Builder shall give written notice of scheduled Design Reviews to the designated the Department contact at least ten (10) Business Days prior to any Design Review, and shall not schedule more than two (2) concurrent Design Reviews.

### **5.3.1. DESIGN REVIEWS**

#### **(a) Meeting location and Participants**

Design Reviews shall be conducted by the Design-Builder Design Manager. Design Review meetings shall be held in the Department regional office or elsewhere in the Project vicinity upon approval from the Department. The Design-Builder Design Quality Manager, the Responsible Engineer, and any specialists having significant input into the design or review shall be present. The Design-Builder shall notify and invite the Department to participate in all Design Reviews. The Department may also invite Stakeholders to attend.

#### **(b) Documentation to be provided**

The Design-Builder shall make available to participants all Design Documents (e.g., drawings, copies of calculations, reports and other information) pertinent to the Design Review, including all prior comments and actions resulting therefrom, as set out herein.

#### **(c) Design-Builder Action Required**

The Design-Builder shall address and attempt to resolve the Department's comments in consultation with the Department. Stakeholder comments, if any, will be forwarded to the Design-Builder by the Department and addressed by the Design-Builder. The Design-Builder shall resolve all comments to the Department's satisfaction and correct all nonconformances and resubmit the document to the designated the Department contact in accordance with the comment resolution procedures stipulated herein.

#### **(d) Time and Cost Impacts Borne by the Design-Builder**

The Design-Builder's time and cost impacts of revisions arising from the Department's participation in Design Reviews and Review and Comment, or required due to the Design-Builder's non-compliance with Contract requirements, shall be borne by the Design-Builder.

The Design-Builder Continuing Responsibility – the Department’s participation in Design Reviews shall not relieve the Design-Builder of its responsibility for the satisfactory completion of the work in accordance with all Contract requirements.

Stages of Design Review – Design Reviews shall be conducted for the following:

(1) Definitive Design Review

The Definitive Design Review shall be the first Design Review requiring participation of the Department, and is intended to verify that the Base Technical Concepts proposed by the Design-Builder meet all Contract requirements. This review can be combined with the Readiness-for-Construction Design Review on smaller projects upon Approval of the Department Alternative Contracting Office. However, the Utility Coordination process must still occur prior to the final RFC plans. The Design Quality Manager shall verify prior to the Definitive Design Review that:

- All Contract requirements applicable to the proposed Technical Concepts, including all applicable standards, regulations, and legal requirements, have been identified, and the proposed Technical Concepts are in compliance;
- The Technical Concepts are substantiated and justified by adequate site investigation and analysis;
- ROW requirements have been identified in the ROW Acquisition sheets;
- Environmental technical studies have been performed;
- The proposed Technical Concepts are constructible;
- Required materials and equipment are available;
- The Technical Concepts meet all quality requirements, and all required design quality procedures have been followed.

Definitive Design Plans are similar to ROW plans in the Department Roadway Design Guidelines and shall have all required information for ROW plans as well as requirements stated in the Contract. These plans shall have as a minimum the following sheets:

- Title Sheet;
- Typical Sections;
- Property Maps & ROW Acquisition Tables;
- Present Layouts;
- Proposed Layouts;
- Proposed Profiles;
- Public Side Roads and Ramp Profiles;
- Private Drive and Field Ramp Profiles;
- Drainage Maps; and
- Erosion Prevention and Sediment Control Plans.

The Title Sheet for the Project plans shall have “**Design-Build Project**” printed in the upper right corner. A project number (XXXXX-XXXX-XX) shall be obtained from the Department Alternate Contracting Office to place on the plans.

For Definitive Design Review Plan Submittals -

- The Department Design contact person, the Department Regional Construction contact person, other Department Divisions (up to seven (7) as required by size of project), all utility companies:
  - One (1) set ½ size plans, including ½ size cross-section sheets
- The Department Design contact person:
  - One (1) set – full size plans including cross-section sheets
- The Department Alternative Contracting Office and all others in the transmittal letter not receiving hardcopy plans:
  - One (1) electronic copy on CD in .pdf including cross-section sheets.

The transmittal may include preliminary reports on additional site investigations, a foundation report, hydraulic report, slope stability report, environmental findings, etc., applicable to the design and in support of the design decisions made.

After the Definitive Design Plans review and all comments have been resolved, the Design-Builder must issue final Definitive Design Plans as follows:

- The Department Alternative Contracting Office:
  - One (1) electronic copy on CD in .pdf including cross-section sheets
  - One (1) set ½ size plans, including ½ size cross-section sheets.
- All Utility Companies identified within the project area:
  - Two (2) sets – full size plans including cross-section sheets.

(2) Interim Design Review

The Design-Builder shall notify the Department if Interim Design Reviews are necessary and shall schedule the necessary Design Reviews following independent review by the Design Quality Manager, which may be presented at a design workshop or meeting with the Department.

The Design-Builder shall also use Interim Design Reviews to verify that the concepts and parameters established and represented by Definitive Design are being followed, and that all Contract requirements continue to be met. The Design-Builder shall specifically highlight, check, and bring to the attention of the Department any information differing from or supplemental to that presented at the Definitive Design Review. Significant changes to the Definitive Design will require a re-submittal and the Department Review and Acceptance.

For Interim Design Reviews -

- The Department Design contact person, the Department Regional Construction contact person:
  - One (1) set 1/2 size plans, including 1/2 size cross-section sheets
- The Department Alternative Contracting Office:
  - One (1) electronic copy on CD (in .pdf) including cross-section sheets

(3) Readiness-for-Construction Design Review

The Design-Builder shall use the RFC Design Review to verify that the concepts and parameters established and represented by Definitive Design are being followed and that all Contract requirements continue to be met. The Design-Builder shall specifically highlight, check, and bring to the attention of the Department any information differing from or supplemental to that presented at the Definitive Design Review. Prior to scheduling the RFC Design Review with the Department, the Design Quality Manager's independent review shall have been completed.

RFC Plans are similar to Construction plans in the Department Roadway Design Guidelines and shall have all required information for Construction plans as well as requirements stated in the Contract. The RFC Plans will show sufficient details and dimensions to define the work. RFC plans shall include ecological information. These plans shall typically have in preferred order the following sheets:

- Title Sheet;
- Roadway Index and Standard Drawings Index;
- Estimated Bridge Quantities and Bridge Index;
- Estimated Roadway Quantities;
- Utilities;
- Typical Sections and Paving Quantities;
- General Notes and Special Notes;
- Tabulated Quantities;
- Detail Sheets;
- Property Maps and Right-of-Way Acquisition Tables;
- Present Layouts;
- Proposed Layouts;
- Proposed Profiles (if needed);
- Public Side Roads and Ramp Profiles;
- Private Drive and Field Ramp Profiles;
- Interchange Grading Plans;
- Drainage Maps;
- Culvert Sections;
- Erosion and Sediment Control Plans;
- Wetland Mitigation Plans;
- Traffic Control Plans with Construction Phasing Notes;
- Signing and Pavement Marking Plans;
- Miscellaneous Signing Details;

- Sign Schedule Sheets;
- Signal Layouts;
- Lighting Layouts;
- Soils Sheets;
- Roadway Cross-Sections;
- Side Road Cross-Sections; and
- Utility Index, Utility Owners, and Utility Sheets.

The Title Sheet for the Project plans shall have “**Design-Build Project**” printed in the upper right corner. The Professional Engineer in charge of the development of the Project plans shall place his seal, including signature and date, on the right side of the title sheet. All plans sheets shall contain the seal, including signature and date, of the Professional Engineer in charge of its development.

For RFC Design Reviews including a copy of the quantity estimates any other supporting data required by the Department for the design or portion of the work covered -

- The Department Design contact person, the Department Regional Construction contact person, other the Department Divisions (up to seven (7) as required by size of project), all utility companies:
  - One (1) set ½ size plans, including ½ size cross-section sheets
- The Department Design contact person:
  - One (1) set – full size plans, including cross-section sheets on Mylar
- The Department Alternative Contracting Office and all others in the transmittal letter not receiving hardcopy plans:
  - One (1) electronic copy on CD (both in .pdf and Microstation) including cross-section sheets

The transmittal shall include foundation reports, hydraulics reports, slope stability reports, and all other technical reports and memoranda prepared in support of the Readiness-for-Construction Plans and Specifications.

Final RFC Plans - the Design-Builder must issue final RFC Plans after the RFC Plans review and all comments have been resolved, as follows to obtain the Construction NTP:

- The Department Alternative Contracting Office:
  - One (1) set – full size plans, including cross-section sheets including one (1) set on Mylar, One (1) electronic copy on CD (both in .pdf and Microstation) including cross-section sheets.

(4) Design-Builder Specification

The Design-Builder shall be responsible for demonstrating that any proposed Specifications meet or exceed the minimum Contract requirements, as determined by the Department in its sole discretion, and are suitable and appropriate to control the work. The Department will

determine, in its sole discretion, if the Design-Builder Specifications meet all Contract requirements and are otherwise suitable and appropriate.

(5) Working (Drawings) Plans Design Review and Shop Drawings

The Working Plans Design Review would only be held if discussion was necessary on the revisions in the Working Design plans submitted after the RFC plans. Typically this would happen on larger projects, not this project. It shall be solely the Design-Builder's responsibility to provide Working Plans of such a nature as to develop a finished Project in accordance with the RFC Plans and Specifications and all Contract requirements. Subsequent modifications must be processed through the Design-Builder's design Review and Acceptance /certification process and the Department Review and Acceptance.

Working Plans - Working Plans shall contain necessary fabrication details, shop drawings, erection diagrams and shoring plans associated with the particular stage of construction and design.

Shop Drawings - When additional details and dimensions are needed, the Design-Builder shall prepare Shop Drawings and submit them to the Department for Review and Acceptance in accordance with the Department's Standard Specifications Subsection 105.02. In any case, the fabricator shall be construed to be an agent of the Design-Builder and any changes from the RFC plans submitted by the fabricator shall be considered as made by the Design-Builder. All costs for changes will be at the expense of the Design-Builder. Shop Drawings for all types of structures shall be submitted by Design-Builder to the designated the Department contact person for Review and Acceptance. Proof of appropriate fabricator certification (as required by the Department's Standard Specifications) for type of structure to be fabricated shall be submitted along with the Shop Drawings.

For Shop Plans submittal –

- In accordance with the Department's Standard Specifications Subsection 105.02.

(6) Design Review of Major Temporary Components

The Design Manager shall conduct a Design Review of Design Documents, if necessary, for major temporary components that represent complex Structures, or that potentially can affect the safety, quality, and durability of the permanent Project components. The review shall include the effect of the major temporary components as designed on the permanent Project components.

(7) Additional Design Reviews

The designated the Department contact person (with Stakeholder involvement, if invited by the Department) may require such additional reviews as the Department considers necessary to monitor continued and uniform consistency in the quality and effective incorporation into Design Documents of design revisions. The Design-Builder may also conduct

additional reviews it deems necessary to facilitate release of RFC Plans and Specifications.

(8) As-Built Design Review

The Design-Builder shall submit the As-Built Plans and Design-Builder Specification to the Department for Review and Acceptance within 30 Calendar Days of completion of the construction work. As-Built Plans and Design-Builder Specification, as amended shall thoroughly describe and identify every aspect of the Project as constructed. The Design-Builder shall make all corrections noted in the Department comments, if any, resulting from the Department's review, and shall resubmit the corrected version to the designated the Department contact for Review and Acceptance.

A transmittal letter and compact disc (CD) containing As-Built drawings and final foundation type, including footing elevations and lengths of individual piles, shall be furnished to the Department Alternative Contracting Office prior to final payment of funds to the Design-Builder. The Professional Engineer in charge of the development of the Project plans shall place his seal, including signature and date, on the right side of the title sheet. All plans sheets shall contain the seal, including signature and date, of the Professional Engineer in charge of its development.

For As-Built Plans and the Design-Builder Specifications following construction completion shall incorporate any changes to the RFC Plans and Specifications, as well as all utility locations within ROW.

For As-Built Plans submittal –

- The Department Alternative Contracting Office and all others in the transmittal letter not receiving hardcopy plans:
  - One (1) set – full size plans, including cross-section sheets on Mylar, One (1) electronic copy on CD (both in .pdf and Microstation) including cross-section sheets.

This submittal shall also include all final design reports, design calculations, Operation & Maintenance manuals, special instructions, and the Design-Builders Project Manager Narrative.

The Design-Builders Project Manger Narrative - The Design-Builders Project Manager Narrative shall consist, at a minimum, of the following:

- General discussion of Project progress;
- Highlight of problems and solutions that were implemented;
- Discussion of design issues, solutions, and suggested improvements for future projects;
- Discussion of each of the significant Change Orders issued for the Project;
- Discussion of new or innovative methods employed and the results achieved, whether or not successful;

- Discussion of potential for improvement in future designs, Quality Management processes and projects;
- Discussion of the results of the post-Project joint review/debrief;
- Feedback regarding a Department project, or aspect of a project, that worked well.
- Design Review Process Flow Chart

If required in the Contract, in the Design-Builder's Quality Plan, the Design-Builder shall expand upon the Design Reviews to fully describe its internal design review processes, and the interface between both the Design-Builders design and design quality organizations and the Design-Builders design quality organization and the Department during the development of Design Documents.

## 5.4. COMMENT AND NONCONFORMANCE RESOLUTION

All Design Reviews shall include a comment and non-conformance report resolution process, whereby unresolved comments and instances of non-conformance are discussed and a written action plan and schedule for resolution is developed. The Design Manager will lead the process.

- (a) Comments - the Department and any other comments from Design Reviews will be transmitted to the Design-Builder. The Design-Builder shall record its proposed disposition and response to each comment and meet with the Department to resolve outstanding comments and dispositions. The Design-Builder shall document final disposition and resolution of all Department and other comments.
- (b) Nonconformances - If a Design Review reveals non-conformance with Contract requirements, the Department will prepare a Design Nonconformance Report and submit it to the Design-Builder for action. The Design-Builder shall make all required corrections and return to the designated Department contact documentation of the corrective action taken.

## 5.5. DESIGN CERTIFICATION

It is the sole responsibility of the Design-Builder to ensure that design of the Design-Build Project follows the Roadway Design Policies and Procedures as described above or as modified by the Contract. Preparation of project plans are addressed above within this **DB Standard Guidance**. The Design-Builder Project Manager shall submit a Design Certification Letter for the Design-Build Project. The Design-Build Project "Design Certification Letter" (sample shown in this Chapter) shall contain statements indicating all the Department Policies and Procedures have been followed and the criteria for the thirteen (13) controlling elements of design have or have not been met or formal approval of a Design Exception has been received from the Department. Appropriate standards and guidelines used during the development of the project have shall also be met.

The "Design Certification Letter" shall also contain a listing of project commitments including environmental, planning, ROW, and any other commitments.

A “Design Certification Letter” shall include a 1/2 size set of the Final Definitive Design Plans (after design review with all comments addressed) for the Department Review and Acceptance prior to any ROW negotiations or any property closings. After the “Design Certification Letter” has been received by the Department and applicable waiting periods for public hearings have expired, the Definitive Design Plans will be Accepted for use.

Acceptance of the “Design Certification Letter” by the Department does not signify the Department’s Review and Approval of the Project design.

The Design-Builder shall not begin construction work until the Readiness-for-Construction Plans and Specifications including Shop Drawings covering such work have been Accepted by the Department and the Construction NTP is issued.

The ROW Appraisal NTP will not be issued until the design approval letter has been signed by the Department and returned to the Design-Builder.

### **5.5.1. DESIGN SUPPORT DURING CONSTRUCTION**

The Designer and Design Quality Manager shall verify during construction that the site conditions are accounted for in, and the construction work performed is consistent with, the relevant Working Plans and RFC Plans and Specifications. The Designer shall prepare any necessary adjustments in such Plans, Working Plans, and Specifications and the Design-Builder shall conduct the appropriate checks, certifications, and reviews in accordance with the requirements stated herein pertaining to design changes. The Design-Builder shall also be responsible for obtaining any permits or authorizations, if any, that may be required as a result of the changes.

**SAMPLE DESIGN CERTIFICATION LETTER**

Design-Builder Name

Address

City, State Zip

Date: \_\_\_\_\_

Design Division Manager

Suite 1200, James K. Polk Bldg

Nashville, TN 37243

Re: DB Contract Number (CDBXXX), Design Certification

Route, Termini, County

Dear Manager:

This letter certifies all TDOT Roadway Design Policies and Procedures have been followed and the criteria for the thirteen (13) controlling elements of design have been met.

***OR***

This letter certifies all TDOT Roadway Design Policies and Procedures have been followed and Formal approval of a Design Exception for (list exception) has been received from TDOT on (date). All other elements of the design meet the criteria for the thirteen (13) controlling elements of design.

***For all Design-Build Projects:***

The following project commitments have been made and are reflected in the plans.

- 1.
- 2.

Sincerely,

\_\_\_\_\_

Design-Builder Official Signature

Eligible to Sign for Responsibility for the Project

Enclosures

Cc: TDOT Alternate Contracting Office

## 5.5.2. CONSTRUCTION

Construction on any design or portion thereof may begin at any time after Department's Acceptance of the Quality Plan or those portions of the Plan covering the work to be performed, and after the applicable RFC Design Review has been completed and Department has issued its Construction NTP. The Design-Builder shall not commence construction of any permanent components or major temporary components until the applicable design checks, Design Reviews, and Design Manager and Design Quality Manager's certifications have been completed, design-related Nonconformance Reports have been addressed and resolved to the satisfaction of Department, Department comments have been resolved, and the Construction NTP has been delivered to the Design-Builder. All the following must also have occurred.

- (a) The RFC Plans and Specification have been signed and stamped by the Responsible Engineer. Any construction initiated by the Design-Builder prior to receiving the Construction NTP shall be at the sole risk of the Design-Builder. For those drawings and documents included in the submittal that are prepared by a manufacturer or supplier or other persons not under his/her direct supervision, the Responsible Engineer shall affix a stamp that indicates the design shown on the sheet or document conforms to the overall design and all Contract requirements.
- (b) The Design Manager has completed his/her checks and reviews in accordance with the requirements stated herein, and has issued a written certification that each of the following conditions have been met:
  - (1) The design has undergone constructability review and is constructible as represented in the RFC Plans and Specification;
  - (2) Working Plans and RFC Plans and Specification for the portion of the Project to be constructed are complete and checked in accordance with this Subsection;
  - (3) The design and drawings for the Traffic Control Plan and temporary erosion prevention and sediment control and environmental measures applicable to the work have been properly completed; and
  - (4) Adequate stakes, lines, and/or monuments necessary to control the work have been established on the Project Site.
- (c) The Design Quality Manager has conducted his/her independent design quality review and has issued a written certification that each of the following conditions have been met:
  - (1) Design checks have been completed;
  - (2) The design conforms to all Legal Requirements and other requirements;
  - (3) Any Design Exceptions have been approved in writing by Department;
  - (4) Design quality activities are following the Design-Builder's Quality Plan; and
  - (5) All outstanding issues and comments from the Design Review have been resolved.

- (d) Department has provided Review and Comment regarding the RFC Plans and Specification and applicable Traffic Control Plan, temporary erosion prevention and sediment control measures, and environmental requirements.
- (e) All Design Non-Conformance Reports issued by the Design Quality Manager or Department have been addressed and resolved by the Design-Builder to the satisfaction of Department.

## CHAPTER 6: RIGHT-OF-WAY, UTILITY AND RAILROAD PROCEDURES

If the Department is responsible for any ROW acquisitions on the Project, the Design-Builder shall provide staking from the ROW Acquisition sheets submitted with their Technical Proposal and included in the Contract. Any revisions needed to these ROW Acquisition sheets shall be provided at the Post-Award meeting for Department Acceptance. All costs associated with any ROW or easement acquisition required after the Acceptance of the ROW Acquisition sheets (as revised at the Post-Award meeting) shall be borne by the Design-Builder.

This rest of this chapter is only applicable if the Design-Builder has the responsibility by Contract for the ROW acquisition process, the Utility relocation process or railroad correspondence.

### 6.1. RIGHT-OF-WAY (ROW)

The ROW process (including all easements) may be included as part of the Contract. Please refer to the Contract for what the Design-Builder's ROW responsibilities will be for this process. The Design-Builder must not proceed with any work related to the ROW process until it has made contact with the designated Department contact person for guidance.

Please be aware that failure to follow all applicable laws, regulations, rules and policies in the execution of this phase will result in the loss of federal funding for all project development phases. Please keep in mind that easements shall follow the same procedure as ROW.

The following is an outline of the basic necessities and procedures for acquiring ROW by a Design-Builder in compliance with Tennessee Department of Transportation (the Department) policies and the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.

Complete detailed requirements can be found in 49 CFR Part 24, "Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs" and the Tennessee Department of Transportation's ROW Procedures Manual Chapters, 3, 7, 8, 9 and 10 and 1680-6-1 Rules and Regulations for Accommodating Utilities within Highway Rights-of-Way, Tennessee Code Annotated (TCA) Part 8 Relocation of Utilities 54-5-801 through 54-5-856, 23 CFR Part 645 "Utilities", and 23 CFR 646 "Railroads". Adherence to the above referenced regulations and procedures are mandatory.

These guidelines are presented in an effort to assist any Design-Builder utilizing federal funding or expecting federal participation in any phase of a proposed project.

The Design-Builder shall submit within their Quality Plan ROW for Review and Acceptance by the Department identifying contacts and outlining the Acquisition Management procedures to be followed, and shall be based on the requirements of the Department ROW Manual and this **DB Standard Guidance**. The plan shall show the Design-Builder's proposal to control, monitor, report on, and assure the quality of the delivery of the ROW acquisition services.

Any ROW or easements required other than specified in the RFP shall be identified by the Design-Builder in an Alternate Technical Concept and approved by the Department. Any costs associated with additional ROW or easements required by the Design-Builder's design not identified in the Contract or revised and Accepted by the Department at the Post-Award meeting will be borne by the Design-Builder.

The Design-Builder shall provide information to the Department to assist in acquiring additional ROW or easements, if necessary. The Design-Builder shall specifically show in the Definitive Design Plans and identify any additional ROW easements (temporary, construction, drainage, etc.) planned.

### **6.1.1. ROW ACQUISITION PHASE**

When the acquisition phase is completed, the Department is required to certify to the FHWA that acquisition was done in accordance with all applicable laws, rules, regulations and policies. Land acquisition procedures are mandated by federal law and policies. If land acquisition procedures are found to be flawed, all federal funding for the project (for all phases, even if other phases were done in accordance with federal law, regulations and procedures) may be withdrawn.

PLEASE NOTE: The Design-Builder shall not proceed with any work pertaining to land acquisition until they receive written approval from the Department ROW. (The Design-Builder should not contact property owners, appraise property or proceed in any manner until this approval is received)

The ROW Acquisition Plan shall contain, as a minimum, the following:

- The name of the Department approved title company(ies) to be used for title services;
- The name and qualifications of the proposed ROW Acquisition Manager; and
- The resumes and qualifications for appraisers, appraisal reviewers, relocation agents, negotiators, real estate attorneys, and ROW personnel who all shall meet the minimum qualifications below and be preapproved by the Department ROW.

The ROW Acquisition Plan shall establish the specific means by which Design-Builder will:

- Provide sufficient personnel to achieve, in accordance with the CPM Schedule, the goals and milestones established for Project ROW acquisition, relocation assistance, appraisals and appraisal review, and clearance/demolition of the improvements from the Project ROW.
- Provide administrative support.
- Provide documentation and reports.
- Produce and distribute acquisition and relocation brochures as approved by the Department.
- Establish, implement, and maintain quality control procedures and quality review standards for the acquisition for Project ROW.
- Prevent fraud, waste and mismanagement.

This outline is general in nature, but covers all phases of the acquisition process. If you need clarification of a point, have any questions or a specific problem, you are urged to contact the designated the Department contact person.

### **6.1.2. ROW DESIGN-BUILDER STAFF**

All consultants and staff must be preapproved by the Department ROW.

#### **1. DESIGN-BUILDER STAFF**

##### **A. Appraiser**

- (a) Must be licensed and certified to conduct real estate appraisals in Tennessee.
- (b) Appraisers must be from Department ROW list of approved appraisers.
- (c) May not have interest, direct or indirect, in the lands being appraised

##### **B. Review Appraiser**

- (a) Must be licensed and certified to conduct real estate appraisals In Tennessee.
- (b) Review appraiser must be from the Department ROW list of approved appraisers.
- (c) May not have any interest, direct or indirect, in the lands being appraised.
- (d) May not act as the appraiser above, a negotiator, buyer or closing agent.
- (e) Establishes just compensation by approval of appraisal OR by use of revised or additional data along with justification for its use.
- (f) All reviews must be submitted to the Department ROW Division for approval.

##### **C. Negotiator (Buyer)**

- (a) Negotiators must be preapproved by the Department ROW Division.
- (b) Makes written offer to purchase.
- (c) May not approve administrative or legal settlements.
- (d) May not close transaction.

##### **D. Relocation/Property Management Agent**

- (a) Relocation/Property Management Agent must be preapproved by the DepartmentROW Division.
- (b) Provides relocation advisory services.
- (c) Computation of relocation benefits
- (d) May act as a negotiator.

##### **E. Closing Agent**

- (a) May not be the negotiator, appraiser or review appraiser.
- (b) May be a local Abstract or Title Company

#### **2. NOTICE**

Property owners must be notified in writing as soon as possible that their properties will be acquired or affected.

#### **3. PROPERTY OWNERS RIGHTS'**

Property owners are entitled:

- A. To be advised of their rights by written statement or brochure.
- B. To the opportunity to accompany the appraiser who appraises their property.
- C. To receive just compensation. This may not be less than the approved appraisal of the fair market value.
- D. To a written statement of the amount of just compensation and a written summary of the basis for that amount, a copy of the appraisal and documentation of the approved offer.
- E. To receive agreed upon purchase price before being required to vacate property.
- F. To have deposited with the court in the case of condemnation, the amount of estimated just compensation before surrendering possession of the property.
- G. To a determination of just compensation by a court of law.
- H. To a reimbursement of expenses incidental to transfer of title to the acquiring agency such as: Recording fees, transfer taxes, fees for partial discharge of mortgage, etc.
- I. To relocation assistance and payments when applicable.
- J. To at least 90 days written notice to vacate from date of possession.
- K. To the right to have the acquiring agency purchase uneconomic remainders.

#### 4. **TITLE EVIDENCE**

A title report and/or abstract and search of county records is required for each parcel. The Design-Builder is to obtain the Department ROW Appraisal NTP, before proceeding to the next phase.

#### 5. **APPRAISAL**

- A. Market Study
  - (a) Must be based on examination of an adequate sample of current sales of comparable properties.
  - (b) Is used to estimate values; narrative discussion should indicate appraiser has clear understanding of the specific property types encountered, the competitive environment, and the value elements that influence price.
- B. The appraisal may be a formal appraisal or an FPA (Formal Part-Affected) appraisal, in addition to those elements required by the Uniform Standards of Professional Appraisal Practice (USPAP).
  - (a) Each format must include a statement that the property owner is offered the opportunity to accompany the appraiser on an inspection of the property.
  - (b) Each must include a statement of value of the land to be acquired, improvements to be acquired, and a separate statement of damages to remaining lands, if any.
  - (c) Each must include a date of valuation.

- (d) Each must contain a description of physical characteristics of the land and improvements being appraised and a description of the lands being acquired, including improvements, if any.
- (e) Each will contain descriptions of comparable sales.
- (f) Each must include a statement that project influence has been disregarded in arriving at the “before” value estimate, but given due consideration in the “after” value estimate in arriving at the recommended compensation.

**6. APPRAISAL REVIEW**

Establishes the just compensation to be offered to the property owner.

- A. The Department reviewer reviews each appraisal for:
  - (a) Compliance with acceptable appraisal standards--the Uniform Act and USPAP.
  - (b) Accuracy and completeness in all relevant approaches to value.
  - (c) Confirmation of data or information used in the appraisal makes a determination as to whether the market data are capable of addressing the value characteristics of each parcel.
  - (d) Explains fully, in writing, any changes, revisions, or corrections made to the appraisal being reviewed.
  - (e) Signs certificate of review and value.
- B. The Design-Builder is to obtain the Department ROW Negotiation NTP, before proceeding to the next phase

**7. NEGOTIATION – ACQUISITION**

- A. Negotiations should be made by personal contact.
- B. Negotiations may be carried out by correspondence if the property owner is a non-resident of the area.
- C. A written offer to purchase must be given to the property owner. This written offer establishes the Initiation of Negotiations
  - (a) The offer must be no less than the amount of the Department ROW approved value.
  - (b) The offer must stipulate the amount being offered for real property and the amount to be paid as damages to remaining lands.
- D. A summary statement of the basis for the offer must be given to the property owner, along with a legal description of the area to be acquired including any easements, a tract map and a copy of the appraisal and the determination of value or the appraisal waiver form.
- E. The property owner must be given a reasonable length of time to consider the offer made.
- F. Counter offers by property owner should be considered.
- G. No coercion or threat shall be used to influence a property owner to accept the offer made.
- H. The property owner may be given the opportunity to retain at a salvage value and move any improvements located within the right of way being acquired. If a property owner elects to retain and move improvements, a

refundable performance deposit will be collected. This option is only valid if the property is acquired by deed.

- I. Negotiations shall include an offer to acquire any uneconomic remnants of land. The property owner may decline this offer.
- J. The negotiator or buyer must prepare and maintain negotiators' logs for each parcel. The negotiators' logs shall cite dates, times and locations of each contact with the property owner or their representative. It shall also include names of those present, a brief summary of the discussion and any counter offers.
- K. Donations of ROW may be accepted, provided the property owner has been apprised of his/her rights to just compensation, and has signed a statement or affidavit that he/she has been offered the opportunity to receive payment of just compensation, but has chosen to donate the necessary ROW.

#### **8. ADMINISTRATIVE AND COURT SETTLEMENTS**

- A. After all good faith efforts to settle a ROW file have failed, a recommendation for Administrative Settlement or Condemnation shall be submitted by the Design-Builder to the Department ROW Division.
- B. The Department ROW Division shall have the responsibility for an Administrative Settlement or condemnation action.
- C. Any party performing Design-Builder ROW appraisal services shall participate in condemnation proceedings as an expert witness if called upon by the Department.
- D. The Design-Builder is to obtain the Department ROW Closing NTP before proceeding to the next phase.

#### **9. CLOSING**

- A. A closing statement is required showing the disbursement of funds to the property owners, mortgages, land contract vendors, lien holders, or to unpaid taxes.
- B. Incidental expenses shall be paid by the Department, or reimbursed to the property owner, such as:
  - (a) Recording fees
  - (b) Transfer taxes
  - (c) Fee for partial discharge of mortgage
  - (d) Mortgage prepayment penalties
- C. The Design-Builder shall obtain the Department ROW Certification NTP before proceeding to the next phase.

#### **10. PROPERTY MANAGEMENT**

Property Management is the control and administration of the lands and improvements acquired. This includes the maintenance, protection, occupancy, rental, and disposal of those improvements.

For those properties or improvements rented on a temporary basis, the rent should be at current fair market value for short term rentals.

The Design-Builder is to obtain the Department ROW Review and Approval, before proceeding to the next phase.

For additional information concerning property management policies, contact the designated Department ROW contact person.

## 11. RELOCATION

- A. Residential displacees may be entitled to:
  - (a) Relocation Advisory Services.
  - (b) Moving cost for personal property.
  - (c) Replacement Housing Payment (RHP):
    - (1) 180 Day Owner
      - (i) RHP of up to \$22,500 based on price differential  
**and**
      - (ii) Incidental expenses relating to the purchase of replacement housing  
**and**
      - (iii) Mortgage interest differential  
**or**
      - (iv) Rental assistance payment not to exceed the amount that the displacee is eligible for under item 1 above.
    - (2) Tenant (90 Day Occupant) or less than 180 Day Owner:
      - (a) Down payment assistance up to \$5,250
      - (b) Rental assistance payment up to \$5,250
- B. A Displaced business, farm or non-profit organization may be entitled to:
  - (a) Relocation Advisory Services and either
  - (b) Moving costs for personal property and
  - (c) Up to \$10,000 in reestablishment expense  
**or**
  - (a) A fixed payment in lieu of moving cost and reestablishment expense not to exceed \$20,000.
- C. The owner of personal property displaced by a project who does not qualify as a residential displacee, a displaced business, farm, or non-profit organization may be entitled to:
  - (a) Relocation Advisory Services
  - (b) Moving cost for personal property

**NOTE:** For detailed instructions concerning eligibility, calculation of these benefits and explanation of the exceptions to these monetary limits, please refer to the Department ROW Procedures Manual, CHAPTER 9 and consult the designated Department ROW contact person.

The entitlements listed are general in nature. For more information concerning relocation benefits, qualification and exclusions, **PLEASE CONTACT YOUR DESIGNATED DEPARTMENT ROW CONTACT PERSON.** The Design-Builder is to obtain the Department Review and Approval before proceeding to the next phase.

## 12. CERTIFICATION

At completion of the project the Design-Builder will be responsible for providing all documentation and files allowing the Department ROW Division to certify the project. Files must be made available upon request by Department staff for review.

Complete detailed requirements can be found in the Code of Federal Regulations 49CFR Part 24 “Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally-Assisted Programs” and the Tennessee Department of Transportation ROW Procedures Manual Chapters 3, 7, 8, 9, and 10. Adherence to the above referenced regulations and procedures are mandatory.

### DOCUMENTS IN A TYPICAL PARCEL FILE

- NOTICE OF INTENT TO ACQUIRE;
- TITLE INFORMATION;
- DONATION FORM;
- APPRAISAL;
- APPRAISAL REVIEW or WAIVER OF APPRAISAL;
- OFFER TO ACQUIRE REAL PROPERTY;
- LEGAL DESCRIPTION;
- TRACT MAP;
- AGREEMENT OF SALE;
- RIGHT OF ENTRY FORM;
- IF ADMINISTRATIVE SETTLEMENT - Written statement approving amount
- INSTRUMENT OF CONVEYANCE – Warranty Deed Or Easement;
- CLOSING STATEMENT;
- NEGOTIATOR’S LOGS;
- IF RELOCATION IS REQUIRED –
  - Determination of Eligibility
  - Offer of Relocation Assistance, including list of available properties
  - Determination of Benefits
  - Copies of all Claims and receipts to verify payments
  - Copy of Notice to Quit – if applicable
- IF CONDEMNATION IS REQUIRED – Petition for Condemnation

## 6.2. UTILITY COORDINATION PROCEDURES

Various highway projects require the adjustment of utility facilities to accommodate the activities of the highway project as well as meet the physical requirements to improve the section of the highway. Utility relocation work can be performed as part of the Contract, by Department personnel during the Contract or prior to the start of construction on the project. In any case, adequate documentation shall be maintained. In various circumstances the appropriate Utility may be reimbursed for expenses incurred for the relocation. Reimbursement will be determined before utility work begins. The Utility Coordination and Relocation process may be included as part of the Contract. Please refer to the Contract to determine if the Design-Builder’s Utility

responsibility will include part of the Department requirements below for this procedure.

During the planning and development of any roadway project, it is advisable to be in early contact with the utility companies that will be affected by your project. Early coordination will be done by the Department in most cases. Time and money can be saved with advanced coordination and planning regarding utility facilities. The Department recommends early contact with the potentially affected utility companies. This serves several purposes such as assuring that you have the proper contacts for your project and this also allows the utilities to plan and budget for your project.

The Design-Builder is responsible for protecting any and all Utilities that the Design-Builder has concluded are not affected in constructing the Project.

### **6.2.1. PROJECT DEVELOPMENT PHASE**

The Department, unless specified in the Contract, shall have the responsibility of coordinating the Project design and construction with all Utilities that may be affected.

The Design-Builder shall assemble all the information that may have a bearing on the final Utility locations for the Project. The plan shall contain the following:

- Existing location of each Utility, based on survey;
- Proposed location of each Utility (for those Utilities that require relocation). Initially this could be based on relocation maps prepared by the Utilities. However, if the proposed relocation does not fit with other proposed Utility relocations, the Design-Builder may need to work with the Utilities to refine/change the proposed new locations so they will work within the context of the Project;
- Specifically show and identify any Utility easements planned;
- A description of any timing and sequencing requirements in relation to the relocations;
- Coordinated process and end results that considers all Utilities;
- Relocation schedule as agreed to in the documents with Utilities.

### **6.2.2. DEFINITIVE DESIGN PLANS (UTILITIES)**

The Design-Builder shall design the Project to avoid conflicts with Utilities where possible, and minimize impacts where conflicts cannot be avoided.

When the plans have been fully developed, the Design-Builder must issue two (2) sets of full size final Definitive Design Plans, and one set of full size cross-sections, to the designated Department contact person for all utilities within the project area for their use in relocation efforts. The utility coordination as specified by state law, Federal Regulations, and established Department procedures is for the Department to authorize utility engineering by sending a letter, with the final Definitive Design Plans, which state the specifics of the project including the projected schedule and give specific dates by which the

utility must submit its proposed relocation plan to the Design-Builder. Sufficient time shall be accommodated in the project schedule to allow for utility coordination in accordance with State statutes.

If the Contract requires the Design-Builder to authorize utility engineering, the letter sent must adhere to the provisions cited in the Department letter in accordance with State statute, delivered with receipt verified, certified mail, or hand delivered signature. The Design-Builder must document and certify to the Department delivery of plans, coordination of utilities, and utility compensation if applicable. At this point, the Design-Builder must certify to the Department that plans have been delivered and accepted by the utility.

If a separate Pre-Construction Utility Conference is necessary due to the magnitude of utility work related to the contract, please contact the Department designated contact person for further information.

### **6.2.3. UTILITIES RESPONSIBLY**

TCA 54-5-854 states within one hundred twenty (120) calendar days following the receipt of the plans (final Definitive Design Plans), the utility owner shall mark on the plans, or on a copy of the plans, the approximate vertical and horizontal locations of underground utility facilities, approximate horizontal location of above-ground utility facilities, a description of each of its existing utility facilities and any proposed new location of the facilities and additional facilities within all rights-of-way shown on the project plans, and prepare a plan and a schedule of calendar days to accomplish the proposed new location. The project plans, or a copy of the plans, and the plan and schedule of calendar days, shall be returned to the Department in care of the person whose name and address are listed on the project plans. If Design-Builder is contracted to perform utility coordination, the plans would be returned to them.

Should coordination with other owners be required in order for an owner to prepare a plan and schedule of calendar days, or should changes to the project plans cause the utility to alter its relocation plan or schedule, then additional time shall be allowed, but in no case shall the additional time exceed the original one hundred twenty (120) calendar days by more than an additional forty-five (45) calendar days. The Design-Builder shall always accommodate the statute (TCA 54-5-854) required 120 -165 days, with additional time to process and certify Utilities in their CPM for Utility Investigation.

Each utility must request the use of a consulting firm if they do not have adequate staff to manage the relocation. This consultant must be selected according to the Department's Utility Procedures for Consultant Approval. The use of the consultant must be approved prior to any formal engineering work being completed or this work will not be eligible for any potential reimbursement.

#### **6.2.4. RELOCATION PLAN**

**NOTE:** The utility phase is considered a part of the ROW process. There is no separate Notice to Proceed for the utility phase. If the Design-Builder has received a Notice to Proceed with the ROW process, it may also proceed with the utility relocation phase.

The Utility must submit its proposed relocation plan to the Department by the date specified by the Department. If Design-Builder is contracted to perform utility coordination, the Utility shall send it to them. A complete submittal would include: an estimate of construction cost, percentage of facilities located on private easements, estimate of any proposed betterment costs, and request for method by which the relocation work to be performed by the utility or to be included in the project construction.

The Design-Builder is then responsible for Review and Comment of the Utility's proposed relocation plan and estimate. The Design-Builder must review the proposed Relocation of Utilities plans and certify in a written statement to the Department that the proposed Relocation of Utilities will not conflict with the proposed Highway improvement and will not conflict with another Utility's relocation plan.

The Department will review the Design-Builder response, and if applicable, certify to FHWA that utility coordination is completed in accordance with State and Federal rules, regulations, and laws.

If the Utility is eligible for reimbursement, a contract must be executed between the Department and the Utility for the relocation work. If betterment is requested by the Utility, provisions must be made for deposit of funds by the Utility for the portions of the relocation that is attributed to betterment.

The Design-Builder must not proceed until the Department has Reviewed and Accepted the plans and estimate.

The Design-Builder shall be liable for any damages negligently inflicted to the owner's utility facilities occurring during the time provided in the schedule of calendar days for installation, relocation or adjustment, or during the approved time for any additional relocation or adjustment.

Contact the designated Department contact person for Utilities forms and additional information. Additional information pertaining to contracts may be found in 23 CFR 635.

### **6.3. UTILITY RELOCATION DOCUMENTATION**

#### **6.3.1. UTILITY RELOCATION NOT IN CONTRACT (NON-REIMBURSABLE OR REIMBURSABLE)**

The relocation work is to be performed by the utility generally before the highway construction work begins. In those situations where the Utility is performing the

relocation construction, the Utility shall be directed to notify the Design Builder Project Manager of the date the Utility intends to begin work in order to provide the Project Manager sufficient time to schedule inspections. This should be documented in the letter from the Design Builder Project Manager which gives Utility authorization to "go to work" or to proceed with the utility relocation construction. The Design Builder Project Manager should inspect and maintain sufficient records that the utility relocation work is done in accordance with the approved plans. The Department will require sufficient documentation in order to certify payments to the Utility met State and Federal requirements.

The Project Utility Diary (DT-0667) shall be used on all projects requiring utility relocations to document the relocation work whether the work is reimbursable or not. The Project Utility Diary section "Description of work Performed" will be the only documentation required. However the documentation shall note if the work is reimbursable or not. The work start date and work complete date shall be noted.

The Design-Builder Project Manager shall verify the start date, completion date, and that the work performed corresponds with the Utility Diary documentation (Circular Letter 105.07-07). The Design-Builder Project Manager shall notify the Department of the completion of work and submit a copy of the Utility Diary to the Department.

The Department shall obtain the cost invoices to be processed for payment. The Department shall compare the submitted invoices to the Utility Project Diary documentation to ensure the records are consistent.

### **6.3.2. UTILITY RELOCATION INCLUDED IN CONTRACT**

Utility relocation work included in the Contract requires documentation of utility item installed quantities. The appropriate Utility company shall provided an inspector to document and certify the items used in the utility relocation.

The following documentation is required for utility relocation work included in the Contract.

(a) **Project Utility Diary (DT-0667)**

The Project Utility Diary (DT-0667) is used to document the relocation work performed.

(b) **Utility Item Certification/Final Acceptance (DT-1716)**

The Utility Item Certification/Final Acceptance form shall be completed and submitted each estimate period. The utility inspector shall check the Installed Item Certification box and sign the appropriate line to certify that the items installed during the estimate period meet all applicable Specifications.

This form is also used for the final acceptance of the utility relocation work. As soon as possible when the relocation is complete, the utility inspector shall check the Final Acceptance of work box and sign the appropriate line to certify the work is complete and accepted by the utility company.

(c) **Summary of Installed Utility Items**

The Summary of Installed Utility Items form shall be completed and submitted each estimate period. The Utility Inspector enters the installed quantities for the appropriate estimate period and attaches the form to the Utility Item Certification/Final Acceptance form.

## **6.4. CONSTRUCTION**

The Design-Builder shall be responsible to issue written authorization for the utility to begin its relocation work.

Therefore, the Design-Builder may not authorize utilities to begin work until it receives a Construction NTP.

The Design-Builder shall be responsible for inspection of the relocation work performed and certify that installation is done in accordance with the approved relocation plans. The Department shall be responsible to make payments as they are submitted by the utility(s) for work completed. The Design-Builder shall certify to the Department that utility relocation work has been authorized. The Design-Builder shall be required to certify that the utility relocations have been completed as per the approved plans.

The Design-Builder shall accurately show the final location of all Utilities on the As-Built Plans for the Project.

Should you have **ANY** questions, please call the designated Department contact person.

## **6.5. PROCEDURES FOR DEALING WITH RAILROAD**

1. FHWA and the Department, in compliance with the Supreme Court Shanklin judgment require that any rail-highway crossing within 200 feet of a federally-funded highway project (including enhancement projects such as pedestrian and bicycle paths) be mitigated to provide adequate protective devices. The identification of those rail-highway crossing locations is the responsibility of the Design-Builder. The Department will make a recommendation for adequate protection. The Design-Builder will be required to request an estimate of cost and engineered plans from the railroad based on the State recommendation. The cost of the protection is participating to the project. This requirement is effective regardless of the type of improvement being considered. The Design-Builder should have personnel well versed in railroad crossing device installation and safety to review any grade crossings within 200-ft of a project limits, as well as review the estimated cost and engineered plans prepared by the railroad.
2. Once the rail-highway crossing has been identified, the Design-Builder should contact the Department Alternative Contracting Office to obtain contact information for the railroad.
3. The Design-Builder should contact the railroad and begin dialogue about the proper protection devices for the crossing in question. The dialogue will request the train traffic/railroad flagging rate data used for construction Contract governing flagging issues and protection of railroad interests. If the Design-Builder subcontracts the project construction, the subcontract must include any railroad requirements. Note: If the project involves fiber-optic or electric wire-line crossings over railroad ROW, the

Design-Builder must send the plans for, and pre-pay the processing fees to the Railroad's Property Services or Permit Dept. for execution of a wire-line crossing agreement. These fees shall be considered incidental and shall be included in the cost of other categories.

4. The Design-Builder shall adhere to all requirement set forth by the railroad not specifically mentioned in this guidance.
5. The Design-Builder shall so arrange and conduct his work that there will be no interference with railroad operations, including train, signal, telephone and telegraphics services, or damage to the property of the railroad, or to wires or other facilities of the tenants on the rights-of-way of the railroad. The use of any scaffolding or other temporary framework that effects horizontal or vertical clearance must first be approved by the railroad consultant engineer and in no case exceed the approved clearances.
6. Should any damage occur to railroad property, as a result of the Design-Builder's unauthorized or negligent operations, and the railroad general manager deems it necessary to repair such damage or perform any work for the protection of its property, the required materials, labor and equipment shall be furnished by the railroad and the Design-Builder shall reimburse it for the costs incurred.
7. If the Design-Builder desires access across railroad's right-of-way and tracks at other than an existing and open public road crossing in or incident to construction of the Project, the railroad may permit such Design-Builder access across said right-of-way and tracks at such location as shall be mutually agreed upon by the railroad general manager and the Design-Builder, provided the Design-Builder first executes a license agreement satisfactory to the railroad and agrees to reimburse the railroad for the flagmen expenses, cost of providing and removing any temporary grade crossing, or other costs which the railroad general manager deems necessary for protection of its property and operations. The Design-Builder shall at no time cross the railroad's right-of-way or tracks with vehicles or equipment of any kind or character, except at such crossing or crossings as may be established by the railroad. These costs shall be considered incidental and shall be included in the cost of other categories.
8. Any flagging service required, when in the opinion of the railroad general manager that such service is necessary for the safety of its operations because of work being performed by the Design-Builder or in connection therewith, will be provided by the railroad. The Design-Builder will reimburse the railroad for cost incurred by the railroad for furnishing flagging services. These costs shall be considered incidental and shall be included in the cost of other categories.
9. The railroad shall have the right to assign a watchman to the site of the project to perform inspection services for protection of its railroad operations, whenever, in the opinion of the railroad general manager, such inspection may be necessary to prevent interference with railroad operations, such as but not necessarily limited to obstruction of track clearances and roadbed drainage, foreign substances on or adjacent to the rails and disturbance of surface and alignment of track, but such inspection shall not relieve the Design-Builder from liability. The cost incurred by the railroad for furnishing a watchman to perform such inspection services will be reimbursed by the Design-Builder. These costs shall be considered incidental and shall be included in the cost of other categories.
10. Explosives shall not be used adjacent to any track or other railroad property without the approval of the railroad general manager, but such approval will not relieve the

Design-Builder from any liability. If the use of the explosives are permitted, the blasting shall be done with light charges under experienced supervision, and every precaution shall be taken to avoid damage to property, injury to persons and interruption of railroad operations. Blasting shall be discontinued immediately on notice from the railroad superintendent that it is too hazardous.

11. The Design-Builder shall not store or pile materials or equipment on the right-of-way of the railroad without having first obtained permission from the railroad general manager, and in no case shall they be stored closer than 13' 0" from the centerline on any railroad track measured at right angles thereto. Such permission will be with the understanding that the railroad will not be liable for any damage to such materials or equipment from any cause and that the railroad general manager may move, or require the Design-Builder to move, at the Design-Builder's expense, such materials and equipment.
12. The Design-Builder will be required upon completion of the work, to remove from within the limits of the railroad's rightof-way, all machinery equipment, surplus materials, false work, rubbish or temporary buildings of said Design-Builder, and to leave the right-of-way in a neat condition, satisfactory to the railroad superintendent. The Design-Builder will be required to provide the designated Department contact person with a letter of release from the railroad superintendent before final acceptance of the Project by the Department.
13. The Design-Builder shall cooperate with others participating in the construction of the Project, to the end that all work may be carried on to the best advantage. No charge or claim of the Design-Builder against either the Department or the railroad will be allowed for hindrance or delay on account of railroad traffic or any work done by the railroad or others, incident to or necessary for safe maintenance of railroad traffic or completion of the Project, but due consideration of any such delay will be reviewed for consideration of an adjusted time Change Order.  
During the construction of the footings or piers or other supports or structures adjacent to any track of the railroad, the Design-Builder shall make adequate provisions against sliding, shifting, sinking, or in any way disturbing the railroad embankment and track operations, by driving temporary sheeting, and/or providing temporary shoring in a manner satisfactory to the designated Department contact person and railroad's designee. Before commencing work on any pier or structure adjacent to any track, the Design-Builder shall submit prints of the proposed shoring and bracing details for the protection of the railroad company's track to the designated Department contact person, and the railroad's designee for their approval. This submittal shall include the proposed method of installation and be accompanied by supporting data, including design computations, soil descriptions, and other pertinent information.  
After approval by the designated Department contact person, four prints of the proposed shoring and bracing details bearing the seal of a registered structural or professional engineer, together with supporting documents, shall be forwarded to the railroad's designee for Review and Acceptance. The Design-Builder shall notify the railroad's designee, and the railroad general manager (in writing) not less than one (1) week in advance of the proposed time of the beginning of the construction of the piers, supports or structures adjacent to the track.
14. When the plans have been prepared, the Design-Builder should send four (4) sets of plans with cover letter to the designated Department contact person to review the plans and

make comments. Existing Fiber Optic facilities installed on the railroad property, not owned by the railroad, are to be processed as a utility relocation, by either the Design-Builder or the Department, depending on who has the responsibility by project agreement. A copy of the letter should be sent to the Manager of the Alternative Contracting Office. The designated Department contact person will provide the recommendation for adequate protection on any rail-highway grade crossings affected by the Project.

15. When the changes requested by the Department have been made, the Design-Builder should transmit the plans to the railroad for Review and Acceptance. The Design-Builder coordination with the railroad will require a letter stating what crossing mitigation is recommended, whom to contact concerning coordination, who will be paying the railroad for engineering, if drainage or conduit will be installed, specifications of the material, proposed installation method, etc.
16. Railroad will send letter either approving the plans as they are designed or with comments detailing what revisions to the plans are needed to protect railroad interests.
17. The railroad may require the Design-Builder to enter into a Preliminary Engineering (PE) Agreement.
18. The Design-Builder should send the revised plans to the railroad for approval, and request the railroad to provide a detailed cost estimate for work required to accommodate the project.
19. When the cost estimate is received from the railroad, the Design-Builder should Review and Approve it.
20. Once the railroad cost estimate has been approved by the Design-Builder, the Design-Builder must submit the plans and estimate to the Department for Review and Acceptance. After Acceptance is received from the Department, the Design-Builder will enter into Contract with railroad. When the contract has been fully executed, the Design-Builder shall officially authorize the railroad to begin work necessary to accommodate the project including requirements for railroad protection inclusive of railroad flaggers. The railroad will begin to bill the Design-Builder for said railroad work. A copy of the letter authorizing such work should be sent to the Department Alternative Contracting Office.

# CHAPTER 7: CONSTRUCTION PROCEDURES

## 7.1. PRE-CONSTRUCTION

At least ten (10) Calendar Days prior to the pre-construction meeting, the Design-Builder shall furnish the Department a complete plan of operations. It shall be held (the Department's Standard Specifications Section 105.06) by the Design-Builder Project Manager to discuss the Design-Builder's plan of operation, required contract provisions, environmental commitments if applicable, erosion prevention and sediment control, traffic control/work zone safety, utility relocations, inspection, materials acceptance, independent assurance, quality control plans, certified payrolls, DBE/Subcontractors, and to establish the level of detail to be required for measuring progress with regard to construction Pay Items, in accordance with this **DB Standard Guidance**. Minutes shall be kept of this meeting, including an attendance roster, and key decisions shall be fully documented. At a minimum, the following shall be submitted at the pre-construction meeting:

- Traffic Control Plan;
- Environmental Compliance Plan, if required by the Contract;
- Erosion Prevention and Sediment Control Plan; and
- Transportation Management Plan

The Design-Builder shall be responsible for the safety and operational aspects of the project work zone. The Design-Builder shall prepare a Transportation Management Plan (TMP) in accordance with the Department Work Zone Safety and Mobility Manual which defines the strategic plan for traffic management on the Project. The TMP shall address major aspects of the work for individual construction areas, phases, and stages including temporary traffic control, transportation operations and public information strategies.

The level of planning required for an individual TMP will depend on the project's anticipated impacts. The first step in developing a TMP for a work zone is to determine the appropriate level of TMP to be utilized.

The TMP shall be submitted to the Department for review and acceptance at least 30 Days prior to beginning the first phase or stage of construction. The Design-Builder shall provide installation, maintenance, and removal of all temporary traffic control devices.

Before meeting with the Department for the pre-construction conference, the Design-Builder shall hold a group utility scheduling meeting with representatives from the utility companies involved with the Project. The Design-Builder shall incorporate the utilities' time needs into the Design-Builder's CPM Schedule submitted at the pre-construction conference.

At least 15 Calendar Days prior to beginning any On-Site construction, unless otherwise authorized in writing by the Department, a pre-construction meeting at a time mutually agreed upon shall be held by the Design-Builder. A meeting announcement shall be sent by the Design-Builder Project Manager to all parties with a vested interest in the project including, but not limited to: Subcontractors, material suppliers, regulatory agencies, utility owners, the Department Regional Director, and other affected agencies. FHWA personnel

shall be included in all meetings and announcements. The designated Department contact person shall provide a listing of all the participants that require an invitation and/or plans.

A separate Pre-Construction Conference (Pre-Erosion Conference) may be necessary due to the magnitude of environmental work or impacts related to the Contract. The appropriate individuals, the Department, utility Representatives, Design-Builder, Subcontractors, Municipal Representatives, etc. shall be invited to the Pre-Erosion Conference. The notice shall be sent in ample time for the invitees to arrange to attend. All information exchanged shall be documented on the EPSC Conference Meeting Minutes Form. All attendees shall receive a copy of the conference minutes.

At the Pre-Construction Conference the Design-Builder shall submit five (5) copies of the Request for Trainee Classification Approval form. The request must include at least the number of trainees required to fulfill the Contract.

Other Meetings - Other meetings may be required by the Department throughout the process.

## **7.2. CONSTRUCTION PROCEDURES**

All construction shall be completed in full compliance with the Contract, which includes **Contract Book 1 (ITDB - Instruction to Design-Builders)**, **Contract Book 2 (Design-Build Contract)**, and **Contract Book 3 (Project Specific Information)**, this **DB Standard Guidance**, the Department's Standard Specifications for Road and Bridge Construction, and the Department Standard Drawings.

The Department will assign a designated Department contact person to participate in the project pre-construction meeting, to conduct routine project reviews to attend quarterly progress meetings, and to participate in the final inspection.

The Design-Builder shall give all required notices and comply with all laws relating to the work and to those engaged in the work. Representatives of regulatory and governmental Authorities shall have access to the work.

It is understood and agreed that the Design-Builder shall obtain and pay for any additional permits required by the method of construction, including without limitation haul roads, temporary channels or temporary ditches, and/or off-site waste and/or borrow areas and shall be included in the Contract Amount.

The Department has the authority to suspend all work until all environmental deficiencies concerning environmental permits are alleviated. No additional time shall be added to the Contract due to this work stoppage. Should the Design-Builder's activities associated with the work on the Design-Build project be in violation as stated in the Department's Standard Specifications Section 107, any fines and/or penalties assessed to the Department will be deducted from monies due the Design-Builder. Any fines and/or penalties assessed to the Design-Builder will be the sole responsibility of the Design-Builder.

### 7.2.1. FIELD CONSTRUCTION

The Design-Builder must use the Department forms for construction record keeping. All project records must be compiled by the Design-Builder and retained in accordance with federal records retention policies.

The quality of materials used on the Project and tests performed must conform to all the Department standard operating policies and procedures. The Quality Assurance Procedures for Construction generally consists of the following points:

- All materials used on the Project must have test reports, material certifications and/or field testing by certified personnel to document that the material meets appropriate specifications.
- Testing must be in accordance with the Department Standard Operating Procedure (SOP 1-1). The source for each type of material must be approved by the Department before delivery is started.

### 7.2.2. DISCOVERY OF HUMAN REMAINS

It is the responsibility of the Design-Builder to know and comply with all state and federal legislation concerning the discovery of human remains in archaeological contexts. Pursuant to **T.C.A. § 11-6-101 et seq., National Historic Preservation Act, Section 106, 36 CFR 800, and 36 CFR 60.4**, human skeletal material must not be knowingly handled, disturbed, or removed at any point during this assessment. If a bone or bone fragment is removed and later identified as human it must be returned to the exact location from which it was removed. If human remains are discovered, the Design-Build Project Manager must immediately stop work in the area and contact the designated Department contact person in order to notify the appropriate Department Archaeologist who will then in turn notify the State Archaeologist. The location of the remains must be documented with a GPS unit conforming to the data collection requirements detailed above. Archaeologists are strongly encouraged to refer to White (1991) and/or Bass (1995) to familiarize themselves with the major diagnostic traits used to distinguish between human and non-human bone. This information is also available on the **Tennessee Archaeology Network**.

### 7.2.3. SIGNING, TRAFFIC CONTROL AND PAVEMENT MARKINGS

The signing traffic control and pavement markings shall be in accordance with Section 700 of the Department's Standard Specifications, the Department Traffic Design Manual and the Department Work Zone Safety and Mobility Manual.

The Signing Plans shall be prepared by the Design-Builder and included in the Readiness-for-Construction Plans. The Design-Builder shall be responsible for:

- The design, fabrication and installation of signs required throughout the construction limits as well as beyond the construction limits to ensure adequate advance signage and spacing is provided;

- Maintaining all existing signs during construction to ensure signs are properly maintained and visible during project construction;
- Design and installation of temporary sign supports;
- Determining the station locations for all signs;
- Determining those existing signs that will no longer be needed upon completion of the project, be responsible for the removal and disposal of these signs and supports and showing and noting these signs on the signing plan;
- Determining, designing, and installing any protection for proposed and existing sign supports.

All revisions in the Readiness-For-Construction signing plan shall be submitted to the Department for Review and Acceptance prior to implementation.

The Traffic Control Plans (TCPs), including pavement markings, shall be submitted with the Readiness-for-Construction plans. All pavement marking material used shall be in accordance with the Department's Standard Specifications, pavement markings are constantly degrading and must be replaced at regular intervals to be effective.

The Design-Builder will be notified for failure to comply with the specification or plans. The safe passage of pedestrian and traffic through and around the temporary traffic control zone, while minimizing confusion and disruption to traffic flow, shall have priority over other Design-Builder activities. Continued failure of the Design-Builder to comply with the requirements of the Department Standard Specifications Section 700, will result in non-refundable deduction of monies from the Contract for non-performance of work that the deficiency is allowed to remain, not as a penalty, but as liquidated damages as specified in **Contract Book 3 (Project Specific Information)**.

Failure of the Contractor to comply with the Specification or take immediate corrective actions required within 48 hours of written notice shall be reason for the Department suspending all other work on the Project, except EPSC and traffic control, applying non-refundable deductions of monies from the Contract at a rate as specified in **Contract Book 3 (Project Specific Information)** per calendar day per notice and/or withholding payment of monies due to the Design-Builder for any work on the Project until traffic control deficiencies are corrected. These other action shall be in addition to the deduction for non-performance of traffic control.

#### **7.2.4. PROJECT INSPECTION**

The Department shall administer the inspection and material sampling and testing pursuant to the Department SOPs.

If an independent entity (Construction Engineering and Inspection – CEI) is required by Contract for this activity, the CEI shall have a qualified construction inspector on-site to view foundation conditions and substructure construction including but not limited to: driving of piles, concrete pours, girder erection, steel

spacing and elevations, deck pouring operations, and other structural appurtenances as necessary. A certification from the Design-Builder engineer of record confirming compliance with the Department standard construction procedures shall be required. The inspection staff shall be qualified and knowledgeable about the type of work taking place, be familiar with the Contract, and certified in accordance with the Department SOP-1-3.

The Design-Builder engineer of record must contact the designated Department contact person to request an initial acceptance inspection for all structures greater than or equal to 20 feet in length.

The Design-Builder shall coordinate and have, at a minimum, monthly project progress meetings to discuss the status of the project and other project issues. The Design-Builder's qualified engineer/executive and the designated Department contact person shall be notified in advance of the scheduled progress meetings.

The designated Department contact person will be conducting daily project reviews to assure the quality of construction and project record keeping is satisfactory. Unsatisfactory workmanship, inspection, acceptance testing, recordkeeping, etc. shall be corrected immediately and avoided in the future to prevent any loss of Project funding.

### **7.2.5. FIELD INSPECTION (CHECKLISTS)**

#### **Asphalt**

- Hot Mix Asphalt Plant Inspector Checklist Report (Circular Letter 407.04-01);
- Hot Mix Asphalt Roadway Inspector Checklist (Circular Letter 407-14.01).

#### **Bridge**

- **Bridge Deck** (Circular Letter 604.17-01)

A Pour Meeting shall be scheduled and conducted prior to any bridge deck pours.

- Pre-Pour;
- During;
- Post Pour.

- **Bridge Inspection and Acceptance**

On new bridge construction as well as bridge repair projects, the Design-Builder Project Manager shall contact the designated Department contact person to request an initial acceptance inspection to certify that the bridge construction, not necessarily the whole project is complete. Even if the approach work is not already in place, the bridge inspectors can do their initial inspection of the structure and document any deficiencies they discover. Their inspection report, listing those deficiencies, can be copied to the Design-Builder Project Manager for the Design-Builder to address before leaving the Project.

The following information must be documented. This information shall include the following for abutments, piers, etc.

- Footing elevations;

- Pile cut-off elevation;
- Pile tip elevation;
- In place pile length.

### **Safety**

- Traffic Control Devices Checklist (Circular Letter 712.07-01).

### **Guardrail**

All Guardrail shall be inspected at the time of installation. The Department or the independent CEI Project inspector shall complete the Guardrail and Guardrail Terminal Anchor Daily Field Report.

Guardrail End Terminals shall be tagged using the appropriate Guardrail Decal available from the designated Department contact person.

- Guardrail and Guardrail Terminal Anchor Daily Field Report (Circular Letter 705.05.01).

Deficient Guardrail found upon inspection shall be documented on the Guardrail Inspection Form for Deficient or Deviated Terminal Units.

## **7.2.6. EPSC INSPECTION**

The Storm Water Pollution Prevention Plan (SWPPP), the Erosion Prevention and Sediment Control (EPSC) plans, and all applicable environmental permits shall be adhered to on the project. Please review the Statewide Storm Water Management Plan (SSWMP) and the implementation of it for training and inspection requirements.

Various permits require routine inspections of EPSC measures, documentation of environmental issues that arise, and completion of various reports. The Design-Builder shall be responsible for compliance with all applicable environmental regulations, including reporting and records keeping.

It is the Design-Builder's responsibility to determine whether or not coverage under the NPDES Construction General Permit (CGP) is required and whether or not a Notice of Intent (NOI) including a Storm Water Pollution Prevention Plan (SWPPP) is required. It is essential that the SWPPP and EPSC plans be followed, and revised as needed, to fully comply with all environmental permits on the Design-Build Project.

The Department requires special emphasis on the proper installation and maintenance of EPSC measures needed due to the on the Design-Build Project storm water requirements. The Design-Builder shall furnish an EPSC supervisor (EPSCS) for EPSC inspections. The EPSCS shall be responsible for coordinating all EPSC activities and features within the Project limits and affected areas for the duration of the on the Design-Build Project. This will be done with the intent to prevent eroded materials, sediments or other pollutants disturbed by construction activities from reaching streams or leaving the limits of construction. The work shall be done in accordance with all applicable special provisions, approved plans, of the the Department Standard Specifications Section 209 current NPDES CGP and all other permit requirements or as directed by the Department.

The Design-Builder shall conduct routine EPSC inspections (as required in the NPDES CGP or within the SSWMP (whichever is more restrictive)) and document (with notes and pictures) the findings to assure that the SWPPP is being followed and non-compliance is unlikely. These EPSC inspections shall include all work associated with the Design-Build project (i.e., waste and/or borrow areas, staging areas, etc.). These EPSC inspections shall be documented on the Erosion Prevention and Sediment Control Construction Inspection Report. This form shall also be used to document Design-Builder compliance with EPSC requirements in conformance with TDEC, USACE, and/or TVA permits. The EPSC inspection report and instructions are noted in Circular Letter 209.01-02.

There is another form called the Construction Storm Water Inspection Certification. The purpose of this form is to certify that inspections of storm water discharge points and EPSC controls at the construction site have been performed. Certification Report instructions are noted on the 2<sup>nd</sup> page included with the EPSC inspection report form.

Repair and maintenance of all EPSC measures shall be made within 24 hours after any environmental inspection or assessment. Failure to comply with this timeframe may result in Liquidated Damages to be deducted from monies due the Design-Builder. It is the Design-Builder's responsibility to notify the Department when a NPDES CGP is required on the Design-Build Project. If the Department is not notified that these requirements exist prior to any land disturbance, all construction related work shall be immediately shut down until the Design-Builder has obtained NPDES Permit Coverage and Liquidated Damages shall be deducted from monies due the Design-Builder.

Whether or not any environmental permits are required, if any land disturbance (including clearing and grubbing) activities occur on the Design-Build project, EPSC measures are required to prevent erosion and control sediment from leaving any work site associated with the Design-Build project and inspected on a routine basis.

All environmental permits, reports and documentation shall be kept at a location within the work site at all times during construction. At any time a regulatory agency requests to view any written environmental information on the Design-Build Project, the Design-Builder must comply with this request in a timely manner.

A Notice of Termination (NOT) – Storm Water Discharges Construction Activity (Circular Letter 107.08-01) notifies TDEC of the request to terminate coverage of the General NPDES Permit for Discharges of Storm Water Associated with Construction Activities. Instructions for completing the NOT form are noted in Circular Letter 107.08-01.

### **7.2.7. ENVIRONMENTAL QUALITY ASSURANCE PROJECT ASSESSMENTS**

If a NPDES CGP is required, the Design-Builder shall have Environmental Quality Assurance (QA) Project Assessments for the Design-Build Project. These assessments include all work associated with the Design-Build project (i.e., waste and/or borrow areas, staging areas, etc.). If not provided by the Department, the Design-Builder will be required by the Contract to acquire the services of an independent, professional Certified in Erosion Prevention and Sediment Control (CPESC) on projects with a NPDES permit to conduct Environmental Quality Assurance Project Assessments. The purpose of the QA Project Assessments is to provide a “third party” independent review to assure that the EPSC measures are installed, repaired, and maintained as required, and assure the requirements of the environmental permits are being documented and followed. A QA Project Assessment report on a form provided by the Department, including pictures, shall be produced for every assessment and submitted concurrently to both the Department and TDEC within five (5) Calendar days after each QA Project Assessment. Failure to comply with this timeframe may result in Liquidated Damages to be deducted from monies due the Design-Builder. Regardless of whether the Department or the Design-Builder’s independent CPESC consultant indicate deficiencies on the QA Project Assessment report, no additional money shall be added to the Contract Amount to alleviate the deficiencies; however, if deficiencies continue to reoccur, Liquidated Damages may be deducted from monies due the Design-Builder.

The QA Project Assessments should be conducted at a frequency stated within the SSWMP, or more frequent if violations or repeat non-conformances occur, but no less than monthly, unless written approval to do so is given by the Department.

Upon concurrence of final stabilization by all involved parties, and the receipt of the final Environmental QA Project Assessment report from the QA Project Assessment team leader (by the Department or independent firm as specified in the Contract), the NOT form shall be completed and submitted to TDEC by the Design-Builder Project Manager with a copy sent to the Manager of the Department Alternative Contracting Office.

### **7.2.8. PUBLIC RELATIONS AND PUBLIC INFORMATION**

The Design-Builder should provide information every Tuesday afternoon to the Department regarding lane closures, construction updates, and general project information. The Design-Builder SHALL NOT have contact with the media, unless specifically requested and/or approved by the Department.

### **7.2.9. DOCUMENTATION**

The Department or the Independent CEI shall maintain a project diary on a daily basis to document the daily activities and major events on a Project.

The diary, in general, will contain a day by day record of all significant activities relating to the project. It is essential that the notes be complete, as they become important evidence in the establishment of responsibilities or liabilities.

A partial list of items to be noted in the diary is:

1. Weather AM & PM;
2. Accumulated Total of Days used and hours worked;
3. Design-Builder's staff on-site;
4. Subcontractors staff on-site;
5. Orders given the Subcontractors;
6. Important discussions with Subcontractors;
7. Accidents/incidents onsite;
8. Official visitors and inspections;
9. Work or materials rejected and reasons;
10. Time of shutting down or resuming of work and explanation;
11. Work done by Design-Builder's or Subcontractor forces during day;
12. General purpose of work, Type and location of work taking place;
13. Identify the controlling item of work for the current construction phase;
14. Length and cause of any delay;
15. Arrival and departure of major equipment, Type and amount of equipment on site (hours used or idle);
16. Unusual conditions, if any such are high water, bridge failures, slides, etc.;
17. Other issues that may affect the completion of the project.

Diary sheets must be signed by the person filling out the sheet and the Design-Builder upon his/her approval. The diary sheets shall be bound in date order with the most recent date on top.

At the completion of the project, all project diaries shall become a part of the permanent record. Project files shall be neatly organized to adequately document and record all Project correspondence, and provide full support for all payments and decisions made including material certifications and test reports, calculations, invoices, etc.

It is of prime importance in the administration of a Contract that records of all activities pertaining to the Contract contain sufficient details and are clear enough to be read and understood by anyone unfamiliar with the Project.

#### **7.2.10. ITEM QUANTITY TICKETS (AGGREGATES, ASPHALTS, ETC)**

The Certified Public Weigher requirements are only a portion of the requirements in regard to Item Quantity Tickets. **Certified Public Weigher** (Circular Letter 109-01.01)

The Department or the Independent CEI Project inspector shall collect the tickets from the carrier upon delivery of the ticketed material, record any additional information on the ticket as necessary, and retain the original copy for payment.

The Department or the Independent CEI shall ensure that the following information is shown on each ticket.

- Contract Number;
- Date;
- Signature of the person accepting the ticket on the jobsite;
- Unit of measure;
- Identification of hauling vehicle.

Additional information the Department or the Independent CEI Project inspector shall write on the last item quantity ticket for a specific day:

- Station and location of placement
- Name of Design-Builder/Subcontractor
- Cumulative totals for the day

The Item Quantity Tickets are totaled daily per item and recorded on the Item Quantity Totals spreadsheet. A calculator tape shall be attached to the daily bundle of tickets. The tape must contain the following information: Contract Number, Project Number, Date, and the accumulated total of tickets.

The Item Quantity Total spreadsheet may be kept electronically or printed and filled in manually. A current accumulative total shall be kept.

### **7.2.11. ITEMS DOCUMENTED USING WORKSHEETS**

Various item quantities are calculated using worksheets. The Department's Standard Specifications and Special Provisions dictate the appropriate deductions, additions, and adjustments applied to the Contract payments. The items shall be documented by the Department or the Independent CEI within the Project records. The following is a listing of the deductions/additions/adjustments:

- **AC Content & Gradation Deduction (Whole Mix or Split Mix)** (the Department's Standard Specifications Subsection 407.20)
- **Material Variation Deduction LOI (Whole Mix or Split Mix)** (the Department's Standard Specifications Subsection 411.10)
- **Density Deduction (Whole Mix or Split Mix)** (the Department's Standard Specifications Subsections 407.15 & 407.20)
- **Defective Concrete (Reduced Pay Rate)** (the Department's Standard Specifications Subsections 604-15, 604-20, 604-31)

The Department or the Independent CEI shall communicate Low Cylinder Break information to the Design-Builder promptly. The documentation to support the recommended correction will be documented on the Evaluation of Low Strength Concrete form. This form shall be completed by the Department or the Independent CEI with a statement by the Design-Builder. Evaluation of Low Strength Concrete (Circular Letter 604.21-01)

- **Adjustments** (Circular Letter 109-02.01)  
Adjustments are used to compensate the Design-Builder for the fluctuating costs of petroleum products. Not all Contracts contain adjustments.

Adjustments are calculated and paid monthly. Adjustment calculations start with the month work begins and continues until the month time stops, when the current price indexes are less than the price index for bidding.

- **Price Adjustment for AC Content (the Department's Standard Specifications Section 307)**
- **Price Adjustment for AC Content (the Department's Standard Specifications Section 411)**
- **Assessment of Liquidated Damages**  
Liquidated Damages are to be assessed on a current basis using the current Contract Completion Date.
- **Rideability**  
Contracts may contain the specifications or provisions dictating deductions, additions, and adjustments for meeting or not meeting the requirements for smoothness.
- **Concrete Pavement Adjustment (the Department's Standard Specifications Sections 501 and 604)**
- **Trainees (Circular Letter 1240-01)**  
Contracts may include a requirement for Trainee Hours. The requirement is one (1) trainee per 1000 hours of training.

The Department approves and signs all five (5) copies of the requests on the determination that the classification(s) are appropriate for the projected scope of work.

Once the classifications are approved, the Design-Builder shall submit an "On the Job Training Application and Notification of Personnel Action" form to Tennessee Road Builders Association (TRBA). TRBA will approve the form and forward a copy to the Department. The On the Job Training Application and Notification of Personnel Action will be referred to as the Personnel Action Form in the Contract. The Personnel Action Form is used for multiple actions required in regard to the training program.

The trainee normally starts work within two (2) weeks of the type work for which he/she is classified. If the type work reaches 15% complete and the trainee has not started work, the Design-Builder shall submit to the Department a written reason as to why the trainee has not started work. If the written reason is not received, **the Progress Payment may be withheld.**

The trainee shall be shown on the Design-Builder payroll by the approved classification and labeled as Trainee. The wage rate shall be compared to ensure that the minimum rate requirements are met. However, if the Approved Personnel Action form has not been received, and the Trainee is shown on the payroll, the payroll shall be returned for correction. Likewise if the Approved Personnel Action Form has been received and the Trainee is shown on the payroll but is not labeled as Trainee, the payroll shall be returned for correction. Additional trainees may be requested at any time during the Project.

The hours shown on the payroll for a trainee shall be entered into a separate log per trainee. The Trainee Excel spreadsheet will be used to track the trainee hours. The hours shown on the Design-Builder payroll for the trainee will be entered into the spreadsheet. The Design-Builder shall pay Trainees according to the Contract requirements.

Appropriate deductions, additions, and adjustments necessary for Contract payments shall be handled as follows:

- **Material Deductions** – The Design-Builder will be notified in writing by the Department of the Pay Items for deduction. The Design-Builder shall prepare a report mitigating the cause of deduction. The Design-Builder shall either take a deduction for the specific Pay Item or replace the defective material at their own expense for payment. If the defective material is such that remove and replace is required, the Design-Builder shall only remove and replace the material for payment at their own expense. If a deduction is required, the deduction will be processed and deducted from monies due the Design-Builder on the Monthly Progress Payment it occurs.
- **Liquidated Damages Deduction** - The Design-Builder will be notified in writing by the Department of the Liquidated Damages deduction amount and reasons for the deduction. If Liquidated Damages are assessed and deducted from monies due the Design-Builder on the Monthly Progress Payment it occurs.
- **Incentive/Disincentive Adjustments** - If the Contract requires an incentive/disincentive special provision, such as rideability, the adjustment will be processed and applied on the Monthly Progress Payment it occurs.

### **7.2.12. MATERIALS AND TESTS**

The Department shall conduct all acceptance testing. Unless the Design-Builder is required to hire an independent representative as specified in the Design-Build Contract for this task, a representative from the Department shall conduct all verification and independent assurance testing for the Design-Build project in accordance with the Department SOP-1-2 and SOP 4-1.

The Quality Assurance Procedures for Construction generally consists of the following points:

- All materials used on the Project must have test reports, material certifications and/or field testing by certified personnel to document that the material meets appropriate the Department Standard Specifications.
- Testing shall be in accordance with a FHWA approved testing program which includes procedures for the sampling, testing and acceptance of materials and products. The source for each type of material must be approved by the Department before delivery is started.

### **7.2.13. ACCEPTANCE TESTS**

Acceptance Sampling and Testing shall be conducted in accordance with the Department SOP-1-1 and SOP 4-1. Acceptance samples and tests are the samples

and tests used for determining the quality and acceptability of the material and workmanship which have been or are being incorporated in the project. The results of these tests are to be used by the Department and the Design-Builder to determine conformance to the Contract. Acceptance Sampling and Testing is performed by the independent CEI or a qualified private testing facility employed by the Design-Builder.

#### **7.2.14. VERIFICATION TESTS**

Verification Sampling and Testing shall be conducted in accordance with the Department SOP-1-1, by a designated Department representative. Verification samples and tests are the samples and tests used for validating the quality of a product which is being incorporated in the Project.

#### **7.2.15. INDEPENDENT ASSURANCE TESTS**

Independent Assurance Sampling and Testing shall be conducted in accordance with the Department SOP-1-2, by a designated Department representative. Independent assurance samples and tests are used for the purpose of making checks on the reliability of the results obtained in Acceptance Sampling and Testing. An independent assurance technician will be responsible for observing the acceptance technician conduct the tests to assure that the proper techniques and procedures are followed. Independent Assurance Sampling and Testing and Acceptance Sampling and Testing shall not be conducted by the same technicians or the same independent entity.

This provides an independent analysis of the QA tests to ensure that the test results are valid. IA technicians will usually be the Department Region personnel, but may also be the Department's Central Laboratory or a Department -contracted independent testing laboratory.

Independent assurance sampling shall be conducted at the minimum frequency established in SOP 1-2. A prompt comparison of acceptance test results with independent assurance test results will be made by the designated representative (the Department or independent entity). This comparison must be documented in the Project records. If the comparison indicates a problem either with the materials or with the testing methods, action must be taken immediately to resolve the problem.

The Department's Central Laboratory will act as a "referee" laboratory for resolution of disputes regarding the Department's Verification Sampling and Testing results and the Design-Builder's QA test results unless a potential for conflict of interest exists. In the event that the dispute is between the QA testing laboratory and the Department's Central Laboratory, the dispute will be resolved by test results obtained from a certified laboratory agreed upon by the Parties. The services of the "referee" laboratory may be requested by either the Department or the Design-Builder. The sampling and testing results determined by the "referee" laboratory shall be final and binding on both Parties and not

subject to dispute resolution under this **DB Standard Guidance**. The Party whose sampling and testing results are not confirmed or supported by the “referee” laboratory (i.e., the unsuccessful Party) shall be responsible for payment for the “referee” services. If the Design-Builder is the unsuccessful Party, the cost of the “referee” laboratory services will be deducted from monies due or to become due the Design-Builder under the Contract.

The Design-Builder shall have documentation that materials and equipment conform to the Contract requirements available at the Project site no less than 24 hours prior to installation or use of such materials or equipment. This documentation shall be retained at the Project site.

### **7.2.16. MATERIAL CERTIFICATION AND ACCEPTANCE**

All materials incorporated in the construction of the project shall be approved regarding material requirements. Materials used on the project must have test reports, material certifications, and/or field testing by certified personnel to document that the materials meet appropriate specifications. (Circular Letter 109-02.02)

The intent of the material certification is to assure that the quality of all materials incorporated into the project is in conformance with the plans and specifications.

At the completion of the Project, the Department or the independent CEI shall document all failing material tests and the corrective action taken by the Design-Builder on the Material Certification Letter with supplement form. The material certification letter from the Design-Builder must be based on an audit of the Project records according to a certification check list stating:

**“The results of the test on acceptance samples indicate that the materials incorporated in the construction work, and the construction operations controlled by sampling and testing, were in conformity with the plans and specifications and such results compare favorably with the results of the independent assurance sampling and testing. Exceptions to the plans and specifications are explained in the attachment.”**

The Department completes and submits this form to the Design-Builder or the independent CEI.

Products delivered to the Project site for use in the work shall be in compliance with the Department Standard Specifications, Qualified Products List, or Design-Build Contract when the Department specifications are utilized. Products accepted by certification shall have a materials certification attached to a completed the Department form DT-044, or similar, stating the Department test requirements and certified test results. Material certifications shall be date appropriate according to the date the specific material was used. Other products shall have daily reports showing actual test results. Progress Payments should not

be made on a material if there are insufficient certifications or test data for that material.

All materials shall be accepted in accordance with the “Materials and Tests” section of this **DB Standard Guidance** and the Department Standard Operating Procedures (SOPs).

Materials not accepted on certification shall have daily reports documenting the actual test results.

The required forms for material certifications/test reports are located at [www.tdot.state.tn.us/materials/fieldops/forms/](http://www.tdot.state.tn.us/materials/fieldops/forms/). Each form has attached an example completed form.

All material certifications/test reports shall be recorded on the test report totals form. There shall be a test report totals form per item that requires certification/test reports for materials used.

Additional source-review tests performed at the Design-Builders request shall be at the Design-Builder’s expense.

#### **7.2.17. FINAL CLEAN-UP**

Before Final Inspection, the Design-Builder shall clean up the Project in accordance with the Department’s Standard Specification, Subsection 104.11. Unless the Contract specifically provides for payment for this item, the Department will make no separate or additional payment for Final Clean-Up.

#### **7.2.18. FINAL INSPECTION/ACCEPTANCE**

When all work is complete, the designated Department contact person and other Department representative as required will make a final inspection of the Project to determine the quality, completeness, and acceptability of the work and to assure that the authorized Project was constructed in reasonable conformance with the Contract requirements, all applicable plans and the Department’s Standard Specifications.

The Department’s Standard Specifications Subsections 105.15 and 108.06 provide the general guidance to determine the inspection process for final acceptance date of the Project. If the inspection discloses any work, in whole or in part, as being unsatisfactory, the Department will give the Design-Builder the necessary written instructions (Punch List) for correction of same, and the Design-Buidler shall immediately comply with and execute such instructions.

The attendees at the inspection shall be listed and, if applicable, the work that must be performed to complete the Project as stated in the Punch List shall be documented in the Project records. Once completed, the Final Inspection Date shall be documented in the Project records.

All projects with bridges greater than or equal to 20 feet long shall receive an initial inspection by a designated Department bridge inspector to develop a punch list prior to acceptance.

Upon completion of the Project, the amount paid to date shall be compared to the documented Milestone completion activities. All differences shall be corrected on the Final Progress Report (the presumed last Progress Payment).

Liquidated Damages shall be assessed on any work that has not been completed in accordance with the Contract after the established Contract Completion Date as stated in **Contract Book 1 (Instruction to Design-Builders - ITDB)**.

### **7.2.19. RETENTION OF RECORDS**

An End of Job Folder shall be created to retain documents that pertain to events that occur at the completion of the project. The documents listed in this section shall be kept in the End of Job file of the Project records.

The Project Records shall be organized, indexed, and available for review on an as needed basis. An index shall be placed in the End of Job Folder. Boxes shall be numbered consecutively and labeled by Contract Number or Project Number, and County.

The Certificate is completed and signed by the Design-Builder upon the approval that the records have been checked and are a true representation of the work that was performed, the final activities are correct, and the final activities are covered by the required material certifications.

The Certificate is placed in the End of Job file of the Project Records.

After the records have been checked by the Department, a document will be sent to the Design-Builder displaying a comparison of the original activities to the final activities. A request to the Design-Builder for CC3s (if applicable) will be attached and any deficient material certifications required for the Department to pay the Final Estimate.

The Department shall also use the End of Job Folder to contain the following documents within separate sections to finalize the Project.

1. Project Records
  - (a) File Management;
  - (b) Contract, including Change Orders;
  - (c) Project Meetings;
  - (d) Project Notices;
  - (e) Attestation of Illegal Immigrants;
  - (f) Plans & Drawings;
  - (g) Sub-Contracts;
  - (h) Labor & Payrolls.
2. Material Certifications;
3. Civil Rights Documents CC-3s, Certification Regarding Money Paid to DBE;

4. Material Certification Letter & Supplement;
5. Environmental Documents;
6. Utility Documents.

The Design-Builder shall maintain the Project records for a period of five (5) years following the completion of the Project.

### **7.3. POST-CONSTRUCTION REVIEW**

In order to determine future construction process improvements, a post-construction review is required on all projects with a Contract Amount of \$10,000,000 (ten million) or greater. This review shall be conducted as soon as practical following the completion of all work. Attendees at this review shall include the Design-Builder and representatives from the following area when applicable: Construction, Design, Structures, Materials and Tests, Project Management, and FHWA. The review shall be facilitated by the Department Alternative Contracting Office or a designated Department contact person. The participants will identify all significant Project problems and make recommendations on how these problems can be avoided on future projects.

A post-construction review report shall be prepared. The report shall provide recommendations on any construction process improvements and how the identified delays can be eliminated.

# CHAPTER 8: TITLE VI PROCEDURES

## 8.1. TITLE VI COMPLIANCE REVIEWS

**49 CFR 21.9; 23 CFR 200.9 (4) (B) (5), (6), (7); 23 CFR 200.11**

Nondiscrimination provisions apply to all federally assisted programs and activities of Federal-aid recipients, Subcontractor-recipients, and Design-Builders, regardless of tier. The provisions prohibit any use of Federal financial assistance to subsidize, promote, or perpetuate discrimination based on race, color, national origin, sex, age, disability/handicap, or income status. Recipients are responsible for determining and obtaining compliance by their Subcontractor-recipients and Design-Builders.

**Responsibilities of the Department and the Design-Builder:** Every agency receiving federal financial assistance must have a comprehensive and proactive Title VI enforcement program to eliminate and prevent discrimination. Every agency that extends Federal financial assistance covered by Title VI is subject to the United States Department of Justice’s (DOJ) coordination regulations and guidelines (28 C.F.R. 42, Subpart F (1994); and § 50.3.). FHWA, for example, is required to obtain assurances of compliance with Title VI from the Department per these regulations (28 C.F.R. §§ 41.5(a)(2), 42.407(b)). In addition, Executive Order 12250 requires each agency to issue appropriate regulations or policy guidance to implement the nondiscrimination provisions of the statutes subject to Executive Order 12250 (Executive Order No. 12250, §1-402, 3 C.F.R. 298 (1981), reprinted in 42 U.S.C. § 2000d-1 (1988)). Accordingly, the Department is required to issue appropriate regulations or policy to the Design-Builder in implementing the nondiscrimination provisions of the Title VI statutes.

The Department Civil Rights Office (CRO) Title VI Program is responsible for implementing, developing, and establishing adequate procedures for identifying and addressing Title VI issues as proscribed by the Federal Highway Administration.

## 8.2. TITLE VI/NONDISCRIMINATION

### 8.2.1. SELECTED AUTHORITIES

49 CFR Part 21	US DOT Title VI Regulations
23 CFR 200	FHWA regulation implementing Title VI of the Civil Rights Act of 1964
Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	The Executive Order requires that each Federal agency shall, to the greatest extent allowed by law, administer and implement its programs, policies, and activities that affect human health or the environment so as to identify and avoid "disproportionately high and adverse" effects on minority and low-income populations.
US DOT Order 5610.2 to	This Order sets forth a process by which DOT

<p>Address Environmental Justice in Minority Populations and Low-Income Populations</p>	<p>and its Operating Administrations will integrate the goals of the Executive Order into their operations. This is to be done through a process developed within the framework of existing requirements, primarily the National Environmental Policy Act (NEPA), Title VI of the Civil Rights Act of 1964 (Title VI), the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (URA), the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), and other DOT applicable statutes, regulations and guidance that concern planning; social, economic, or environmental matters; public health or welfare; and public involvement. The Order is an internal directive to the various components of DOT and does not create any right to judicial review for compliance or noncompliance with its provisions.</p>
<p>FHWA Order 6640.23</p>	<p>FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations - establishes policies and procedures for the Federal Highway Administration (FHWA) to use in complying with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (EO 12898), dated February 11, 1994.</p>
<p>Executive Order 13166: Limited English Proficiency</p>	<p>Requires all agencies that provide federal financial assistance to issue guidance on how recipients of that assistance can take reasonable steps to provide meaningful access consistent with Title VI and the Title VI regulations. The Order also requires that agencies create plans for ensuring that their own activities also provide meaningful access for persons who are limited English proficient</p>

1. The Design-Builder shall:
  - Endorse Nondiscrimination assurances;
  - Adhere to the requirements of Section 162(a) of the Federal-Aid Highway Act of 1973 (23 U.S.C. 324) that requires there be no discrimination on the ground of sex;
  - Attend a Department Title VI training session (register online at <http://www.tdot.state.tn.us/civil%20Rights/titlevi/training.htm>)

## 2. POST-AWARD COMPLIANCE REPORTS

As part of on-going monitoring, the Title VI Program will conduct annual desk audits for planning agencies, urban and rural transit systems and the Department Emphasis Program Areas.

## 3. MANDATORY ON-SITE REVIEWS

The Department will not randomly select the Design-Builder for on-site compliance reviews. On -site compliance reviews will be required under the following circumstances:

A. A determination respecting probable compliance cannot be made on the basis of the Design-Builder's "TITLE VI COMPLIANCE ASSESSMENT."

B. When Design-Builders have been found in partial noncompliance by the TITLE VI COMPLIANCE ASSESSMENT, as the result of informal resolution, have agreed to take corrective measures, within one year of the approval of Federal financial assistance for the project, or at the estimated mid-point of a project expected to be completed within less than two years. The Title VI Program has the discretion to limit such reviews to consideration of the deficiencies identified by the previous review and the corrective measures undertaken as a result of conciliation.

C. At any time when the CRO Executive Director or Title VI Program Director believes that such a review is warranted with respect to any Project.

D. When less than \$10,000 in state and/or federal financial assistance is provided by the Department with respect to any Project, the Title VI Program may waive any requirement for a pre-award onsite compliance review.

## 4. Discretionary FOLLOW-UP ON-SITE REVIEWS

The Department Title VI Program will conduct follow-up reviews as deemed necessary and appropriate to assure that federally and/or state assisted services and benefits are distributed in a fair and equitable manner.

## CHAPTER 9: BILLING & PAYMENT PROCEDURES

The Design-Builder must provide the Department Alternative Contracting Office with the name(s) of persons authorized to sign as “Design-Builder Project Manager” and “Design-Builder Official”. The Department assumes no liability in the event it remits payment based upon an Progress Report submitted by an unauthorized individual; once payment is remitted pursuant to a Progress Report, any work that the Department has previously remitted payment will be rejected. Progress Schedules received that do not contain the original signature of an authorized person will not be submitted to the Department Finance Office for payment.

Progress Schedules shall be submitted for reimbursement on monthly basis. Progress Schedules should be sent to the designated Department contact person for verification of progress. Acceptable Progress Schedules will be forwarded by the designated Department contact person for processing payment through the Department Finance Office. **NOTE:** Projects for which no billing is received for more than a one (1) year period may be subject to de-obligation by the Federal Highway Administration.

The Design-Builder must keep all documentation supporting amounts billed to the State of Tennessee for three (3) years from the date the project is closed with the Federal Highway Administration. This is NOT the same date as the last reimbursement from the State of Tennessee. The Department will notify the Design-Builder when the Project has been closed with the Federal Highway Administration.

### 9.1. MONTHLY PROGRESS SUBMITTALS

The Design-Builder shall submit each of the following to the Department with the Design-Builder’s Progress Report.

(a) Critical Path Method (CPM) Schedule

- (1) The Design-Builder shall update, on at least a monthly basis for the Department for Review and Comment, a CPM to reflect the current status of the Project, as well as expected future activities, including approved Change Orders. Each Project Status CPM Schedule Update shall accurately reflect all activities completed as of the effective date of the update schedule. Each Project Status CPM Schedule Update shall indicate the completion percentage of each Pay Item number (by cost) of the Project. The Design-Builder shall submit a single hard copy of the Project Status CPM Schedule Update in a single copy, if possible, on 11 ½“ x 17” color plot sheets along with a backup disk of the schedule in electronic format. In developing the CPM Schedule, the Design-Builder shall give priority to the acquisition of parcels that have significant impact on the Project Schedule and/or affect the Critical Path as so indicated.
- (2) The Project Status CPM Schedule Update shall include a schedule narrative report which describes the status of the Project in detail.
- (3) If, in the opinion of the Department, the specified work falls behind the CPM Schedule, the Design-Builder shall take such actions as are necessary to improve its progress. If the Design-Builder is behind schedule any month, it shall indicate what measures it will take in the next 30 Calendar Days to put the work back on schedule so as to meet Interim Completion Dates and the Contract Completion Date. The

- Design-Builder shall not be entitled to any additional compensation on account of the requirement to put the work back on schedule unless provided for in other provisions of the Contract. In preparing the revised CPM Schedule, the Design-Builder shall consider increasing its workforce, construction plant and equipment, or number of work shifts. If the Department finds the proposed CPM revision unacceptable, the Department may require the Design-Builder to submit a new revision.
- (4) The Design-Builder shall employ and supply a sufficient force of workers, materials, and equipment and shall prosecute the work with such diligence so as to (a) maintain the rate of progress indicated on the CPM Schedule, (b) prevent work stoppage, and (c) ensure completion of the Project within the Contract Time. Any additional or unanticipated costs or expense required to maintain the schedule shall be solely the Design-Builder's obligation and shall not be charged to the Department unless provided for in other provisions of the Contract.
- (5) The Design-Builder shall furnish weekly work schedules indicating the number of personnel, kind of equipment, and location and nature of the work to be performed.
- (6) If the Design-Builder fails to submit a CPM Schedule or any revision or update when required, the Department may withhold any Progress Payment.
- (b) The Design-Builder shall submit a Monthly Progress Report, consisting of the following:
- A progress narrative (including the overall project completion percentage);
  - Quality certifications;
  - A safety report;
  - A monthly Project Status CPM Schedule Update , including updated projections for the acquisition date of each parcel;
  - A Change Order status report;
  - A monthly subcontract report;
  - An updated Contract Submittals List;
  - A summary of planned or unplanned hazardous materials and contaminated substance activities.
- (c) Progress Narrative - The Design-Builder shall prepare and submit a monthly progress narrative. The progress narrative shall summarize all of the following information:
- Activity and progress for the Contract, including design and construction, and identification of the start and completion dates of work;
  - Achievement of any Milestones;
  - Quality Management efforts, including results of any Design Reviews and/or quality audits;
  - Indicate the date to begin the acquisition of the Project ROW and the anticipated completion date of acquisition activities for each parcel. The Department shall be advised of all Additional Properties and temporary rights or interests in real property to be acquired by Design-Builder.
  - Problems/issues that arose during the period and remaining problems/issues to be resolved;
  - Resolution of problems/issues raised in previous progress schedules or resolved during the period;

- Critical schedule issues and proposed resolutions, proposal of actions planned to correct any negative float and explanation of potential delays and/or problems and their estimated impact on performance;
  - Issues which may need the Department's attention or action for the next month, including Design Reviews.
- (d) The Design-Builder shall submit within the monthly report any outstanding Change Order requests containing all of the following:
- The Design-Builder's and the Department's Change Order identification numbers and/or coding;
  - The issue title;
  - A brief description of the change;
  - Any outstanding issues to be resolved;
  - The estimated cost and time implications;
  - The projected resolution date.
- (e) Subcontract Report - As part of the Monthly Progress Report, the Design-Builder shall submit a Subcontractor Paid Summary Report (subcontract report) providing the Department with an updated list of Subcontractors (design and construction, at all tiers, including labor only). The Design-Builder shall specifically identify DBEs in the report. The location where each Subcontractor worked shall also be shown.

The Design-Builder shall also report the results of all procurements completed in the previous month, including those procured competitively and by other means. The Design-Builder shall indicate for each the type of work or product procured, and size of the procurement (in dollars), the names of firms competing for the subcontract, and the name of the successful Subcontractor.

The report shall indicate the total number of Subcontractors and the total dollar value of all subcontracts awarded to date. The report shall show the total number of subcontracts, regardless of tier, and all of the following:

- The original subcontract amount;
  - The value of any modification to date;
  - Payments made to date;
  - Tier of the Subcontractor;
  - Appropriate signatures.
- (f) Within 30 Calendar Days of the Construction NTP, the Design-Builder shall prepare and submit a Contract Submittals List covering all submittals required during the first six (6) months of the Contract. Thereafter, the Design-Builder shall submit monthly updates with the Monthly Progress Report. The updated list shall show the record of submittals made to date and shall show the submittals due over the next three (3) month period.
- (g) The Design-Builder shall submit a monthly summary of planned or unplanned activities related to Hazardous Materials.
- (h) The Design-Builder Construction Quality Manager shall independently review the submittals for the Department, and upon completion shall certify to the Department that the information is accurate and complete. Additionally, the Design-Builder Construction Quality Manager shall certify that all work shown as complete for the previous progress

schedule period, including that of the Design Professionals, Subcontractors at all tiers, suppliers, and fabricators, has been checked and/or inspected by the Design-Builder Construction Quality Manager's quality staff, and that all work complies with all Contract requirements.

The Design-Builder Construction Quality Manager shall also certify to the Department that the Quality Plan and all measures, protocols, and procedures provided therein, are functioning properly and are being followed, and that Quality Management is functioning independently from the work production.

## 9.2. PAYMENT, PRICING, AND MEASUREMENT OF PAY

### 9.2.1. PRICING AND PAYMENT TERMS

The Department will only compensate for Pay Items incorporated into the Project performed in accordance with the terms of this **DB Standard Guidance** and the Contract.

Payment constitutes full compensation to the Design-Builder for furnishing all materials, equipment, tools, labor, and Incidentals necessary to complete the work; and for risk, loss, damage, and expense arising from the nature or prosecution of the work or from the action of the elements, subject to the provisions of this **DB Standard Guidance**. The Design-Builder shall include the costs of bonds, insurance, overhead and profit for the Project in each Pay Item of work to be performed. The term "Lump Sum" unit of payment shall mean complete payment for the work described in the Contract. When a complete Pay Item Lump Sum unit is specified as the unit of measure, it shall mean to include all necessary fittings and accessories.

When the Contract states that the Pay Item Total is compensation for certain materials or work essential or incidental to the Pay Item, the same materials or work will not be measured or paid under any other Pay Item. The Pay Item breakdowns shall state all materials, work and equipment needed for that specific activity.

The pricing and payment terms and the means of determining the percent work performed is described herein. The Parties shall use a detailed breakdown of pricing and measurement of pay quantities to determine the percent work performed. This detailed breakdown shall be determined prior to first Progress Report processing and shall be used throughout the term of the Contract as the basis for payment. The detailed breakdown must be reconciled to the Contract's Schedule of Prices for each month's payment cycle.

- (a) Pricing concept - The pricing concept is summarized as follows:
- Pay Items are established by the Department for major work activities within the Schedule of Items.

- Pay Item Totals are assigned by the Design-Builder to each Pay Item on the Schedule of Items to facilitate the determination of the work performed (work progress).

(b) Assignment of Pay Items Breakdown

Identification of Pay Items – identifies each Pay Item Description, Pay Item Breakdown (PIB), Pay Item number shown on the Schedule of Items.

For each Pay Item, the Design-Builder shall determine the value of work on the Schedule of Items as the Pay Item Total. The Design-Builder shall also describe within their Technical Proposal, in bulleted or narrative form, all of the work generally encompassed within each Pay Item as PIB's, and shall cross-reference items of a similar nature that are included in other Pay Items.

For the Construction, Stakes, Lines and Grades shall be compensated in accordance with the payment schedule for Lump Sum shown within the Department's Standard Specifications Subsection 105.18

### 9.2.2. MEASUREMENT / DETERMINING PROGRESS

The Parties will conduct a post award meeting for the purpose of refining the level of detail to be required for measuring progress in the Progress Payout Schedule with regard to percentage complete for each Pay Item. Progress shall be determined on a cumulative percent of work complete basis, consistent Pay Item Totals and PIBs required pursuant to this **DB Standard Guidance**.

In the event the Parties cannot agree on the level of detail to be required, the Department shall establish the requirements, which decision shall be final. The Design-Builder shall include the basis for progress measurement and Pay Item which must be accepted by the Department prior to the Department's processing of the Design-Builder's first Monthly Progress Report.

### 9.2.3. PROGRESS PAYMENTS

The Department shall make Progress Payments to the Design-Builder in general accordance with this **DB Standard Guidance**. Materials will only be paid for if they have been properly tested for acceptance or have the necessary certifications submitted.

Monthly Progress Schedules submitted to the Department shall contain all the necessary documentation and certifications as required in the Payment Section of this **DB Standard Guidance**.

- (a) Required Submittals - the Department will make payments only in accordance with the Payout Schedule only if a Progress Report conforming to Contract requirements and all required accompanying

submittals, prepared in accordance with Contract requirements have been submitted to and approved by the Department.

- (b) Payment Does Not Constitute Acceptance - the Department's payment of progress shall not be construed as Acceptance or Approval of any part of the work, and shall not relieve the Design-Builder of responsibility for defective materials or workmanship.
- (c) Progress Payout Schedule - The percentage of time, upon which Progress Payments are based, is not represented to be precise, and all estimated quantities are subject to correction in the final payment. If the Design-Builder uses these estimates as a basis for making payments to Subcontractors, the Design-Builder assumes all risk and bears any losses that result.

If work is not performed per Contract requirements, the Design-Builder will not be considered to have progressed the work beyond the previous month's level until work is brought into compliance.

- (1) Submittal of Progress Payout Schedule – At the same time each month, the Design-Builder Project Manager shall submit to the Department for review, an estimate of the amount of work completed through the previous month, calculated based on the CPM Schedule and the Pay Item Total allocation for each activity within the Monthly Progress Report. Sufficiently detailed information shall be provided for support. The Design-Builder Project Manager (or Quality Manager, if required) shall verify and certify satisfactory completion of all work being submitted for payment and that the work complies with all quality requirements of the Contract. See example Progress Schedule Form PSI at the end of this document.

Notwithstanding the foregoing, the amount of each progress payment will not exceed the time of the work performed, as determined by the Department. If work is not performed per Contract requirements, payment will be suspended at the previous month's level until work is brought into compliance.

- (2) A "Design-Builder Progress Report" must be submitted monthly to the Department Alternative Contracting Office for all costs.

#### **9.2.4. PAYMENT UNDER TERMINATED CONTRACT**

Payment for work performed under the Contract that is terminated will be determined under (a) or (b) of this subsection.

- (a) Termination for Default - Upon termination of the Contract for the Design-Builder's default, the Department will make no further payment to the Design-Builder. The Department will make progress payments to the entity to whom the Contract is assigned, but may

withhold an amount sufficient to cover anticipated the Department costs, as determined by the Department, to complete the Project.

Upon completion of the Project, the Department will determine the total amount that the defaulting Design-Builder would have been entitled to receive under the terms of the Contract for the work actually completed by the Design-Builder, had the Design-Builder completed the work (the “Cost of the Work”).

If the Cost of the work completed by the Design-Builder, less the sum of all amounts previously paid to the Design-Builder, exceeds the expense incurred by the Department in completing the work, including without limitation expenses for additional managerial and administrative services, the Department will pay the excess to the Design-Builder, subject to the consent of the Design-Builder’s surety.

If the expense incurred by the Department in completing the work exceeds the Contract Amount, the Design-Builder or the Design-Builder’s surety shall pay to the Department the amount of the excess expense.

The Department’s determination of the expense incurred by the Department and the total amount of the Department damage resulting from the Design-Builder’s default shall be final.

If a termination for default is determined by a court of competent jurisdiction to be unjustified, it shall be deemed a termination for public convenience, and payment to the Design-Builder will be made as provided below.

(b) Termination for Public Convenience

- (1) General - Full or partial termination of the Contract shall not relieve the Design-Builder of responsibility for completed portions of the work, or relieve the Design-Builder’s surety of the obligation for any just claims arising from the completed work.
- (2) Mobilization - If mobilization is not included as an activity within a separate Pay Item, but payment is otherwise allowable as a reimbursable item under the Contract, the Department may pay the Design-Builder for mobilization expenses, including moving equipment to and from the Project Site. If allowed, payment of mobilization expenses will be based on cost documentation submitted by the Design-Builder to the Department.
- (3) All Other Work - the Department will pay the Design-Builder at the price stipulated in the Contract for the number of Pay Items of completed, accepted work. For Pay Items partially completed, payment will be as mutually agreed, or, if not agreed, as the

Department determines to be fair and equitable. No claim for loss of anticipated profits will be allowed.

### **9.2.5. PROMPT PAYMENT AND RETAINAGE**

The Design-Builder is required to pay each Subcontractor within 30 days from receipt of each payment the Design-Builder receives for work.

The “Prompt Payment to Subcontractors” Form must be completed by the Design-Builder to certify each month that payment has been made to the appropriate Subcontractors. The prompt payment form will run two months in arrears (example: to receive progress payment for March 2003 the prompt payment form for January 2003 must be on file).

The Design-Builder shall not withhold any retainage from the progress payments to their Subcontractors.

### **9.2.6. PAYMENT FOR CHANGES IN MATERIALS COSTS**

Material Certifications covering each item shall be on file before payment may be processed. (Circular Letter 109-02.02)

Material price adjustments are not available for all Projects. If material price adjustments are available on a Project, it will be stated within **Contract Book 3 (Project Specific Information)**.

### **9.2.7. FUEL COST PRICE ADJUSTMENT**

Fuel price adjustments are not available for all Projects. If fuel price adjustments are available on a Project, it will be stated within **Contract Book 3 (Project Specific Information)**.

## **9.3. ROW COSTS**

Any costs associated with the Design-Builder responsibilities for ROW purchase and/or ROW service shall be stated in the **Contract Book 3 (Project Specific Information)**.

## **9.4. FINAL PAYMENT**

- (a) Final Estimate - As soon as practicable after Final Inspection and Acceptance, the Design-Builder will prepare a final Progress Report of the Pay Items performed. With this Progress Report as a base, the total amount due the Design-Builder will be determined according to the terms of the Contract, including without limitation any amounts due for Extra work performed.
- (b) Final Payment - The amount of final payment will be the difference between the total amount due the Design-Builder and the sum of all payments previously made , minus any deductions or Liquidated Damages assessed by the Department against the Design-Builder. All prior payments shall be subject to correction in the final estimate and payment.

After computation of the final amount due, final payment will be mailed to the Design-Builder's last known address, as shown in the records of the Department.

- (c) No Waiver of Right to Make Adjustment – See the Department's Standard Specifications Subsection 107.20.

## 9.5. EXAMPLE PROJECT PROGRESS SCHEDULE

CDB Contract #: \_\_\_\_\_

CDB Project Description: \_\_\_\_\_

Progress Payment #: \_\_\_\_\_

Submittal Date: \_\_\_\_\_

PM	PROJECT MANAGEMENT					
PAY ITEM #	DESCRIPTION	UNIT	UNIT PRICE	% OF CONTRACT PROGRESS	AMOUNT FOR MONTH	AMOUNT INVOICED TO DATE
105-08.20	CONTRACT MANAGEMENT	LS	\$ _____	_____ %	\$ _____	\$ _____
105-08.25	QUALITY MANAGEMENT	LS	\$ _____	_____ %	\$ _____	\$ _____
105-08.35	SAFETY MANAGEMENT	LS	\$ _____	_____ %	\$ _____	\$ _____
109-10.10	DESIGN-BUILD OJT TRAINEE REIMBURSEMENT	LS	\$ _____	_____ %	\$ _____	\$ _____
717-99.95	MOBILIZATION (DESIGN-BUILD)	LS	\$ _____	_____ %	\$ _____	\$ _____
	<b>PROJECT MANAGEMENT SUBTOTAL PM</b>			_____ %	\$ _____	\$ _____

<b>E&amp;C</b>	<b>ENGINEERING &amp; CONSTRUCTION</b>					
<b>PAY ITEM #</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>UNIT PRICE</b>	<b>% OF CONTRACT PROGRESS</b>	<b>AMOUNT FOR MONTH</b>	<b>AMOUNT INVOICED TO DATE</b>
105-01.20	DESIGN-BUILD CONSTR STAKES, LINES&GRADES	LS	\$ _____	_____ %	\$ _____	\$ _____
105-01.55	DESIGN-BUILD DESIGN ENG SERVICES	LS	\$ _____	_____ %	\$ _____	\$ _____
203-01.95	DESIGN-BUILD GRADING AND ROADWAYS	LS	\$ _____	_____ %	\$ _____	\$ _____
204-05.50	DESIGN-BUILD GEOTECHNICAL	LS	\$ _____	_____ %	\$ _____	\$ _____
209-01.50	DESIGN-BUILD ENVIR MANAGMNT (INCL. EPSC)	LS	\$ _____	_____ %	\$ _____	\$ _____
301-50.50	DESIGN-BUILD PAVEMENT	LS	\$ _____	_____ %	\$ _____	\$ _____
604-10.95	DESIGN-BUILD BRIDGES	LS	\$ _____	_____ %	\$ _____	\$ _____

<b>E&amp;C</b>	<b>ENGINEERING &amp; CONSTRUCTION</b>					
<b>PAY ITEM #</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>UNIT PRICE</b>	<b>% OF CONTRACT PROGRESS</b>	<b>AMOUNT FOR MONTH</b>	<b>AMOUNT INVOICED TO DATE</b>
604-50.50	DESIGN-BUILD MINOR STRUCTURES (OTHER)	LS	\$ _____	_____ %	\$ _____	\$ _____
610-10.50	DESIGN-BUILD DRAINAGE	LS	\$ _____	_____ %	\$ _____	\$ _____
712-01-75	DESIGN-BUILD MAINTENANCE OF TRAFFIC	LS	\$ _____	_____ %	\$ _____	\$ _____
713-15.25	DESIGN-BUILD SIGNING	LS	\$ _____	_____ %	\$ _____	\$ _____
714-40.75	DESIGN-BUILD UTILITIES	LS	\$ _____	_____ %	\$ _____	\$ _____
714-50.50	DESIGN-BUILD LIGHTING	LS	\$ _____	_____ %	\$ _____	\$ _____
716-99.50	DESIGN-BUILD STRIPING/ PAVEMENT MARKINGS	LS	\$ _____	_____ %	\$ _____	\$ _____
725-07.95	DESIGN-BUILD ITS	LS	\$ _____	_____ %	\$ _____	\$ _____

<b>E&amp;C</b>	<b>ENGINEERING &amp; CONSTRUCTION</b>					
<b>PAY ITEM #</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>UNIT PRICE</b>	<b>% OF CONTRACT PROGRESS</b>	<b>AMOUNT FOR MONTH</b>	<b>AMOUNT INVOICED TO DATE</b>
730-01.50	DESIGN-BUILD SIGNALS	LS	\$ _____	_____ %	\$ _____	\$ _____
801-01.50	DESIGN-BUILD VEGETATION	LS	\$ _____	_____ %	\$ _____	\$ _____
	<b>ENGINEERING &amp; CONSTRUCTION SUBTOTAL (E&amp;C)</b>	LS		_____ %	\$ _____	\$ _____

<b>PROJECT TOTAL</b>					
	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>% OF CONTRACT PROGRESS</b>	<b>AMOUNT FOR MONTH</b>	<b>AMOUNT INVOICED TO DATE</b>
	<b>PROGRESS PAYMENT</b>	LS	_____ %	\$ _____	\$ _____

## **APPENDIX A**

### **REFERENCES, DEFINITIONS, AND ACRONYM LIST**

## REFERENCES

Resource	Website
Federal Regulation 23 CFR	<a href="http://www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=200423">http://www.access.gpo.gov/cgi-bin/cfrassemble.cgi?title=200423</a>
Federal Regulation 23 CFR 636 (Design-Build Contracting)	<a href="http://www.access.gpo.gov/nara/cfr/waisidx_07/23cfr636_07.html">http://www.access.gpo.gov/nara/cfr/waisidx_07/23cfr636_07.html</a>
FEMA Map Service Center	<a href="http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&amp;catalogId=10001&amp;langId=-1">http://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&amp;catalogId=10001&amp;langId=-1</a>
FHWA other websites	<a href="http://www.fhwa.dot.gov/fhwaweb.htm">http://www.fhwa.dot.gov/fhwaweb.htm</a>
FHWA Hydraulic Engineering Circulars	<a href="http://www.fhwa.dot.gov/engineering/hydraulics/library_listing.cfm">http://www.fhwa.dot.gov/engineering/hydraulics/library_listing.cfm</a>
FHWA Manual on Uniform Traffic Control Devices	<a href="http://mutcd.fhwa.dot.gov/">http://mutcd.fhwa.dot.gov/</a>
Federal Wild and Scenic Rivers	<a href="http://www.nps.gov/rivers/">http://www.nps.gov/rivers/</a>
TVA	<a href="http://www.tva.com/river/26apermits/">http://www.tva.com/river/26apermits/</a>
USACE Nashville Environmental	<a href="http://www.lrn.usace.army.mil/permits.htm">http://www.lrn.usace.army.mil/permits.htm</a>
USACE Memphis Environmental	<a href="http://www.mvm.usace.army.mil/environmental.asp">http://www.mvm.usace.army.mil/environmental.asp</a>
TCA, Title 54	<a href="http://198.187.128.12/tennessee/lpext.dll?f=templates&amp;fn=fs-main.htm&amp;2.0">http://198.187.128.12/tennessee/lpext.dll?f=templates&amp;fn=fs-main.htm&amp;2.0</a>
TDEC Summary of Permits	<a href="http://www.state.tn.us/environment/permits/#wpc">http://www.state.tn.us/environment/permits/#wpc</a>
State Scenic Rivers	<a href="http://www.state.tn.us/environment/na/scenicrivers/">http://www.state.tn.us/environment/na/scenicrivers/</a>
TDEC/TDOT Consent Order	<a href="http://www.tennessee.gov/environment/wpc/pdf/consentagreement04.pdf">http://www.tennessee.gov/environment/wpc/pdf/consentagreement04.pdf</a>
TDEC Erosion and Sediment Control Handbook	<a href="http://www.state.tn.us/environment/wpc/sed_ero_controlhandbook/">http://www.state.tn.us/environment/wpc/sed_ero_controlhandbook/</a>
TDOT Construction Home	<a href="http://www.tdot.state.tn.us/construction/">http://www.tdot.state.tn.us/construction/</a>

Resource	Website
TDOT's Standard Specifications and Supplemental Specifications	<a href="http://www.tdot.state.tn.us/construction/specs.htm">http://www.tdot.state.tn.us/construction/specs.htm</a>
TDOT Construction Circular Letters	<a href="http://www.tdot.state.tn.us/construction/Circular_Letters/circltr.pdf">http://www.tdot.state.tn.us/construction/Circular_Letters/circltr.pdf</a>
TDOT Rules And Regulations For Accommodating Utilities Within Highway Rights-Of- Way Chapter 1680-6-1	<a href="http://tennessee.gov/sos/rules/1680/1680-06/1680-06-01.pdf">http://tennessee.gov/sos/rules/1680/1680-06/1680-06-01.pdf</a>
TDOT Standard Drawing Library	<a href="http://www.tdot.state.tn.us/Chief_Engineer/engr_library/stdrlib.htm">http://www.tdot.state.tn.us/Chief_Engineer/engr_library/stdrlib.htm</a>
TDOT Design Division Guidelines and Instructional Bulletins	<a href="http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/DesGuide.htm">http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/DesGuide.htm</a>
TDOT Design CADD Standards	<a href="http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/v8/V8design.htm">http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/v8/V8design.htm</a>
TDOT Qualified Products List	<a href="http://www.tdot.state.tn.us/materials/reseval/qualprod.htm">http://www.tdot.state.tn.us/materials/reseval/qualprod.htm</a>
TDOT Materials and Test Home	<a href="http://www.tdot.state.tn.us/materials/">http://www.tdot.state.tn.us/materials/</a>
TDOT Materials and Test SOP's	<a href="http://www.tdot.state.tn.us/materials/fieldops/sop/">http://www.tdot.state.tn.us/materials/fieldops/sop/</a>
TDOT's Public Involvement Plan (PIP)	<a href="http://www.tdot.state.tn.us/documents/pip.pdf">http://www.tdot.state.tn.us/documents/pip.pdf</a>
TDOT Retaining Wall Policy	<a href="http://www.tdot.state.tn.us/materials/geotech/default.htm">http://www.tdot.state.tn.us/materials/geotech/default.htm</a>
TDOT Traffic Design Manual	<a href="http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/Traffic_Design_Manual.pdf">http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/Traffic_Design_Manual.pdf</a>
TDOT Work Zone Safety and Mobility Manual	<a href="http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/TDOTWorkZoneSafetyMobilityManual.pdf">http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/TDOTWorkZoneSafetyMobilityManual.pdf</a>

Resource	Website
TDOT Survey Manual	<a href="http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/TDOT%20SURVEY%20MANUAL/SURVEY_MANUAL.pdf">http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/TDOT%20SURVEY%20MANUAL/SURVEY_MANUAL.pdf</a>
TDOT Design Procedures for Hydraulic Structures	<a href="http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/structures/docs/thmall.pdf">http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/structures/docs/thmall.pdf</a>
TDOT Design Drainage Manual	<a href="http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/DrainManChap%201-10.htm">http://www.tdot.state.tn.us/Chief_Engineer/assistant_engineer_design/design/DrainManChap%201-10.htm</a>
TDOT Statewide Storm Water Management Plan	<a href="http://www.tdot.state.tn.us/sswmp/">http://www.tdot.state.tn.us/sswmp/</a>

In the instance that a Design-Builder does not have Internet capability, a hard copy of any reference material can be purchased from the Department Alternative Contracting Office at 615-741-2414.

## DEFINITIONS

With the exception of titles, headings, proper names and the beginning of sentences, capitalized words indicate that they have been given a defined meaning below, or in the text accompanying the term.

- **“Accept” or “Acceptance”** is the Department’s written statement indicating that the subject work appears to comply with all Contract requirements and authorizing the Design-Builder to proceed at its risk with Contract performance, utilizing the work or incorporating the work into the Project. Such Acceptance shall not constitute affirmation that the subject work complies with all Contract requirements. Further, Acceptance will only be given for those submittals, activities, and work specifically identified as "for Acceptance" in the Contract. With regard to Final Acceptance, see definition.
- **“Addendum”** is a written interpretation or modification of the Contract which is delivered to prospective bidders prior to the opening of bids.
- **“Adjusted Low Bid”** means a form of best value selection in which qualitative aspects are scored on a 0 to 100 scale expressed as a decimal; price is then divided by the qualitative score or calculated by a modified version of this formula as stated within the RFP to yield an “adjusted bid”. Award is made to the Design-Builder with the lowest adjusted bid.
- **“Advertisement”** is the public advertisement inviting Statement of Qualification for the design and/or construction of specific projects in response to a Request for Qualifications.
- **“Alternate Technical Concepts”** are alternative concepts to the Base Technical Concept which promote innovation and are equal or better in quality or effect as determined by the Department in its sole discretion and which have successfully been used elsewhere under comparable circumstances.
- **“Approval”** is a written statement from the Department that the submission was satisfactory.
- **“As-Built Plans”** are plans reflecting the construction work as actually performed under the Contract.
- **“Authorities”** are regulatory agencies, courts, and federal, State, and local political subdivisions with jurisdiction over the activity, the entity, the workers, the work, the Project, a particular work location or materials development source, or the Project Site.
- **“Award”** is written notification to the Design-Builder that the Design-Builder has been awarded a Contract.
- **“Base Technical Concept”** is the project information provided in the RFP upon which Design-Builders will develop their Technical and Price Proposals, and such project information may include without limitation roadway alignment, preliminary designs, interchange configurations, etc. as well as Design Documents either (a) included in the Contract as of the Effective Date or (b) developed during the term of the Contract, that meet or exceed minimum Contract requirements, as determined by the Department in its sole discretion, and otherwise comply with all Contract terms.
- **“Best and Final Offer”** is a change to a Design-Builder’s Technical and/or Price Proposal made at the request of, or as allowed by, the Department within a Best and Final Offer RFP after the solicitation closing date when all Price Proposals exceed an acceptable range of the Department’s estimate.

- “**Best and Final Offer RFP**” is a revised RFP issued to all eligible Design-Builders that may make minor changes to the scope and/or contract requirements to allow Design-Builders to revise their Technical and/or Price Proposals.
- “**Best Value Selection**” means any selection process in which proposals contain both price and qualitative components and award is based upon a combination of price and qualitative considerations.
- “**Bridge**” is a structure erected over a stream, watercourse, highway, railroad or opening, for carrying pedestrian and/or vehicle traffic, having a length, measured along the centerline of the roadway, of more than 20 feet (6.1 meters) between the faces of end supports.
- “**Business Day**” is any Calendar Day, beginning and ending at midnight, between Monday and Friday, inclusive, excluding State-recognized holidays.
- “**Calendar Day**” is every day shown on the calendar beginning and ending at midnight.
- “**Change Order**” is a written order issued by the Department to the Design-Builder modifying work required by the Contract, and, if applicable, establishing the basis of payment or a change in schedule for the modified work.
- “**Changed Work**” is work included in a Pay Item and within the scope of the Project that is different from that reflected in the Contract as stated within the DB Standard Guidance.
- “**Close Conformance**” is where the Design-Builder complies with Working tolerances given in the Department’s Standard Specifications. Where working tolerances are not given, Close Conformance means compliance, in the Department’s judgment, with reasonable and customary manufacturing and construction tolerances.
- “**Construction Easement**” is a right owned by the Department in a parcel of land owned by a third party outside the highway right-of-way for the purpose of containing construction that exceeds the right-of-way.
- “**Context Sensitive and Sustainable Solutions**” are solutions that (a) reflect social values (community values; cultural, aesthetic, and historic resources; and diversity); (b) maintain safety and mobility; and (c) support economic prosperity. “Sustainable solutions” are those that achieve responsible stewardship of the natural environment and optimize long-term performance.
- “**Contract**” is the written agreement between the Department and the Design-Builder, including all Contract Documents, describing the work to be completed and defining the rights and obligations of the Department and the Design-Builder.
- “**Contract Amount**” is the total amount to be paid for the work performed under the Contract, as it may be adjusted from time to time accounting for Extra work, additional work (required by the Department), or deductive Change Orders. “**Contract Amount**” does not include:
  - adjustments made pursuant to these provisions to account for price fluctuations in designated commodities;
  - amounts that may be paid in incentive awards pursuant to **Contract Book 3 (Project Specific Information)**;
  - amounts deducted from progress payments as Liquidated Damages;

- amounts authorized under the terms of the Contract to be deducted from Progress Payments as reimbursement for the Department payments made on behalf of the Design-Builder or to meet Design-Builder obligations;
  - amounts deducted from Progress Payments pursuant to court order or other legal mandate; or
  - other amounts authorized under terms of the Contract to be deducted from Progress Payments.
- **“Contract Completion Date”** is the date identified in the Contract, by which all work under the Contract, with the exception of plant establishment, must be completed.
  - **“Contract Documents”** are the documents identified as a Contract Book as well as all documents incorporated therein by reference during the term of the Contract.
  - **“Contract Specifications”** are Specifications from which the Design-Builder is authorized to assemble the Design-Builder Specifications, which include (a) the Department specifications, (b) DB Standard Guidance, and (c) such additional Specification, if any, developed by the Design-Builder and authorized for use pursuant to Change Order.
  - **“Contract Time”** is the amount of time allowed under the Contract to complete all work, except for plant establishment and Punch-List Items, by the Contract Completion Date specified in the Contract, Multiple Interim Completion Dates within the Contract Time may be stipulated in the Contract.
  - **“Critical Path”** is the time-scaled, cost-loaded Critical Path network, updated from time to time in accordance with Contract requirements and depicting (a) Pay Items and subordinated activities and their respective prices (distributed over time); (b) durations, sequences, and interrelationships that represent Design-Builder's work plans; (c) Design-Builder's work structure for designing, constructing, and completing the Project; and (d) the Contract Amount, distributed over the term of the Contract.
  - **“Cross-Section”** is the exact image formed by a plane cutting through an object, usually at right angles to a central axis, to determine area.
  - **“Deficiency”** is a material failure of a Proposal to meet the Department requirements, or a combination of significant weaknesses in a Proposal that increases the risk of unsuccessful Contract performance to a level unacceptable to the Department.
  - **“Definitive Design”** is Base Technical Concepts developed by the Design-Builder to such a degree of completion as will enable the Department to make a meaningful evaluation, and which, upon the Department Acceptance, will form the contractual basis upon which the Plans and Design-Builder Specification must be developed.
  - **“Definitive Design Review”** is the process whereby the Department: (a) evaluates the Design-Builder's proposed Definitive Design; (b) collaborates with the Design-Builder in developing and incorporating any modifications they may agree upon; and (c) formally Accepts the resulting Definitive Design.
  - **“Design-Build”** means a project delivery method that combines all or some portions of the design and construction phases of a project – including without limitation design, right-of-way acquisition, regulatory permit approvals, utility relocation, and construction – into a single contract.

- **“Design-Build Contract”** means an agreement that provides for the design and construction of a project – which without limitation may include design, rights-of-way acquisition, regulatory permit approvals, utility relocation, and construction – into a single contract.
- **“Design-Build Project Estimate”** is the Department’s Project cost estimate prepared from Project-specific features, components and issues; this estimate is based upon historical the Department cost data, trends, and market forecasting.
- **“Design-Build Review Committee”** means the committee designated by the Department to review and evaluate Statements of Qualifications and/or Technical and Price Proposals for the purpose of selecting a Design-Builder for a Design-Build Contract.
- **“Design-Builder”** means any entity or joint venture contractually responsible for delivering the project design and construction, or, as the context may require, any entity or joint venture that responds to a the Department solicitation for a Design-Build Contract. The Design-Build Team is the Design-Builder and all subcontractors.
- **“Design-Builder Specification”** are specifications implementing the Plans, and otherwise complying with all Contract requirements, that the Design-Builder assembles from (a) the the Department Standard Specifications and the Department Special Provisions (modified by the Design-Builder as necessary to conform to Contract terminology and requirements); and (b) additional Specifications, if any, developed by the Design-Builder and authorized for use pursuant to Change Order.
- **“Design Documents”** are the Base Technical Concepts, Definitive Design, Interim Design, Readiness-for-Construction Plans, the Design-Builder Specifications, As-Built Plans, Working Plans, Shop Drawings, and all other design documents, if any, referenced in the Contract or required to construct the Project, and all required Quality Management documentation.
- **“Drainage Easement”** is a right owned by the Department in a parcel of land owned by a third party outside the highway right-of-way to construct and maintain ditches, channels, or structures for directing the course and flow of water outside the highway right-of-way.
- **“Easement”** is a property right to use or control real property of another.
- **“Environmental Boundaries”** are the determined impacts of the proposed alternative alignment shown on the plans within a specified distance from the proposed centerline (i.e. streams, wetlands, sinkholes, etc.).
- **“Environmental Boundary Studies”** are studies within a specified distance from the proposed centerline to determine the impacts of the proposed alternative alignments conducted by degreed biologists including literature and database surveys as well as on-foot reconnaissance with particular attention to locating streams, wetlands, and specialized habitats such as glades, caves, springs, and sinkholes which could harbor protected species or influence water quality.
- **“Ephemeral Stream”** is a stream that has flowing water only during and for a short duration after precipitation events in a typical year. Ephemeral streambeds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from precipitation is the primary source of water for stream flow. Ephemeral streams typically support few aquatic organisms. When aquatic organisms are found they typically have a very short aquatic life stage.

- **“Equipment”** is all machinery, tools, manufactured products, and fabricated items either needed to perform the Contract or specified for incorporation into the Project.
- **“Establishment Period”** is the time specified to assure satisfactory establishment and growth of planted materials.
- **“Extra Work”** is an item of work not provided for in the Contract as awarded but found essential to the satisfactory completion of the Contract within its intended scope.
- **“Final Acceptance”** is written confirmation by the Department that the Project has been completed in accordance with Contract requirements, with the exception of warranty obligations, if any, and has been accepted.
- **“Final Inspection”** is the inspection conducted by the Department to determine that the Project has been completed in accordance with Contract requirements.
- **“Fixed Price/Best Design”** means a variation of Design-Build utilizing a best value selection process in which contract price is established by the Department and stated in the Request for Proposals document. Design solutions and other qualitative factors are evaluated and rated. Award is made to the Design-Builder offering the best qualitative proposal for the established price.
- **“Force Account Work”** is a method of payment for items of Extra work ordered by the Department to be paid according to the DB Standard Guidance.
- **“Highway”** is every road, street, thoroughfare and place, including Bridges, viaducts and other Structures within the boundaries of the State, open, used, or intended for use by vehicular traffic.
- **“Incidental”** is a term identifying those acts, services, transactions, property, or items for which the Department will make no separate or additional payment to the Design-Builder under the Contract.
- **“Inspect”** or **“Inspection”** is a visual examination and evaluation by the Design-Builder of construction, manufacturing, design, safety, and maintenance practices, processes, and products, including document control and review, to ensure that such practices, processes, and products comply with all Contract requirements. The Department, or a representative for the Department, shall conduct inspections to evaluate whether such practices, processes, and products appear to comply with Contract requirements. However, the Department’s inspections shall not relieve the Design-Builder of its sole responsibility to perform the Contract according to its terms.
- **“Interim Completion Date(s)”** is the date(s) established in Contract as the deadline by which certain specified components of the construction work must be completed, with the exception of plant establishment. There may be one or more Interim Completion Dates established for a Project. Any applicable Liquidated Damages will be identified in **Contract Book 3 (Project Specific Information)**.
- **“Interim Design Review”** is the design development occurring after Definitive Design Acceptance and prior to Readiness-For-Construction (RFC) plan submittal to remedy conflicts, account for exceptions, and incorporate betterments.
- **“Intermittent Stream”** is a stream that has flowing water during certain times of the year, when ground water provides water for stream flow during a typical year. During dry periods,

intermittent streams may not have flowing water. Runoff from precipitation is a supplemental source of water for stream flow. The biological community of intermittent streams is composed of species that are aquatic during a part of their life history or move to perennial water sources.

- **“Key Personnel”** are persons and entities specifically identified in the Contract.
- **“Laws or Legal Requirements”** are statutes, regulations, rules, ordinances, codes, permits, opinions, orders, judgments, and decrees issued by Authorities. In each case, unless otherwise expressly stated in the Contract, the law is to be understood to be the current version in effect at the time the event governed by the law takes place. This applies regardless of whether a specific law has been cited, included, summarized, or paraphrased in the Contract.
- **“Listing of Milestones”** is the listing describing the Milestones and stipulating dates by which Milestones are to be achieved in order to maintain periodic payments in accordance with the Contract.
- **“Liquidated Damages”** are a specific sum of money stipulated by the contracting parties as the appropriate amount of actual damages to be recovered for each day of delay in delivery or completion of the Project.
- **“Lowest Price-Technically Acceptable”** means a type of modified Design-Build selection process in which the Department identifies evaluation factors that establish the minimum requirements of acceptability. Proposals are evaluated for acceptability but not ranked using non-cost/price factors. The award will be made on the basis of the lowest evaluated price of proposals meeting or exceeding the acceptability standards for non-cost/price factors. Evaluated prices may include provisions such as cost-plus-time bidding, lane rental or other cost-based provisions.
- **“Major Participants”** are (1) all general partners or joint venture members of the Design-Builder; (2) all individuals, persons, proprietorships, partnerships, limited liability partnerships, corporations, professional corporations, limited liability companies, business associations, or other legal entity, however organized, holding (directly or indirectly) a 20% or greater interest in the Design-Builder; and (3) the lead engineering/design firm(s).
- **“Milestone”** is a defined step, identified on the Schedule of Milestones, toward the completion of work.
- **“Mitigation”** is the restoration, enhancement, or preservation of a natural resource for the purpose of compensating for unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization have been achieved. Mitigation is required for all stream relocations, encapsulations and wetland impacts which do not meet requirements for General Aquatic Resource Alterations Permits (TDEC), or for certain Nationwide Section 404 permits (USACE). Mitigation could include on-site replacement, off-site replacement, contributing funds to a wetland bank or site and contributing funds to the TWRP TSMP In-Lieu Fee Program.
- **“Modified Design-Build”** means a variation of Design-Build in which the Department furnishes Design-Builders with partially complete plans. The Design-Builder’s role is generally limited to the completion of the design and construction of the project.

- **“Monthly Progress Payment”** is the detailed Pay Item Totals breakdown of the work included in a monthly report, that serves as the basis for measuring the time of work performed as estimated in the CPM Schedule, and which must be approved by the Department as a condition of payment.
- **“Notice to Proceed”** is written notice authorizing the Design-Builder to begin performance of the work on a portion of the Project.
- **“On-Site Work”** is any work taking place at a work location, including designated staging areas adjacent to the work location.
- **“Organizational Conflict of Interest”** means that because of other activities or relationships with other persons, a person is unable or potentially unable to render impartial assistance or advice to the owner or the person’s objectivity in performing the contract work is or might be otherwise impaired, or a person has an unfair competitive advantage.
- **“Performance and Payment Bond”** is the approved security furnished by the Design-Builder's surety as a guaranty of the Design-Builder's performance of the Contract and of its obligation to pay promptly in full all sums due for materials, equipment, and labor furnished to complete the work.
- **“Perennial Stream”** is a stream that has flowing water year-round during a typical hydrologic year. The water table is located above the streambed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from precipitation is a supplemental source of water for stream flow. Perennial streams support a diverse aquatic community of organisms year round and are often the streams that support major fisheries.
- **“Plans”** are drawings prepared by or for the Design-Builder and stamped and signed by the Responsible Engineer, that show work location, type, dimensions, and details of construction work to be performed under the Contract, as well as the Department-prepared Standard Drawings and other details produced by the Department if used in, or referenced in, the Design-Builder’s drawings.
- **“Preliminary Design”** defines the general project location and design concepts. It includes, but is not limited to, preliminary engineering and other activities and analyses, such as environmental assessments, environmental boundaries studies, topographic surveys, metes and bounds surveys, geotechnical investigations, hydrologic analysis, hydraulic analysis, utility engineering, traffic studies, financial plans, revenue estimates, hazardous materials assessments (including pyritic materials), general estimates of the types and quantities of materials, and other work needed to establish parameters for the final design.
- **“Prequalification”** means the Department’s process for determining whether a Design-Builder, or any member thereof, is fundamentally qualified to compete for a particular project or class of projects.
- **“Pay Items”** are component tasks for which the Design-Builder has assigned Pay Item Totals.
- **“Pay Item Totals”** are values assigned by the Design-Builder to individual Pay Items and task components of individual Pay Items for purposes of calculating the value of work performed, that must be detailed in the Monthly Progress Report to support payment, as set out in the Schedule of Items.

- **“Price Proposal”** means the price submitted by a Design-Builder to provide the required design and construction services.
- **“Price Reasonableness”** means the determination that the price of the work for any project or series of projects is not excessive and is a fair and reasonable price for the services to be performed.
- **“Programmatic Plans”** are the Design-Builder’s Safety Plan, Public Information Plan, Quality Plan, and all other plans identified in the Contract that describe programs or processes to be followed in performing the Contract, other than construction drawings, means or methods.
- **“Project”** is the specific improvement, together with all appurtenances to be constructed, and all processes required to complete the improvement, under the Contract.
- **“Project Records”** are all information in any way relating to the Project or performance of the Contract whether any of such records are paper-based, in the form of electronic data or in electronic/digital format, capable of being reduced to paper-based or electronic/digital format, in audio format, or constitute visual reproductions such as photos or videotape, in any way relating to the Project, including but not limited to all: financial and accounting records and information; correspondence, internal communications, communications with the Department and Authorities, notices, orders, permits, opinions, field notes, file notes, and diary entries; survey drawings, reports, maps, original computations and other data; and materials testing records, materials certifications; work product; and all other documents and information generated by or for, or received by, the Design-Builder in performance of the Contract.
- **“Project Site”** is the physical location within the confines of which construction and related activities are to be performed, including authorized State-controlled contiguous storage and staging areas.
- **“Proposal”** is the offer of a Design-Builder to perform the work and is the combination of the Technical and Price Proposals.
- **“Proposal Guarantee”** is a Proposal bond in the form of cashier’s check issued by an insured institution or certified check submitted with a Proposal to assure that the Design-Builder will enter into the Contract if the Proposal is accepted.
- **“Punch List”** is a listing of instructions for correction of unsatisfactory work, in whole or in part, after an inspection by the Department prior to final acceptance.
- **“Quality Management”** is the activities performed by the Design-Builder to ensure that the work meets all Contract requirements, including documentation of all Quality Program activities. For design Quality Management, this includes, but is not limited to: (a) procedures for evaluating, establishing, monitoring, and maintaining design quality; (b) Design Reviews, and (c) design checks, evaluations, and review of Design Documents for constructability, conformance to applicable design professional standards of practice, and compliance with the law, regulations, applicable standards, and other Contract requirements. For construction workmanship and materials Quality Management, this includes, but is not limited to: (a) procedures for materials handling and for evaluating, establishing, monitoring, and maintaining construction quality; (b) inspection of source development and aggregate production plants, fabrication and production of manufactured products, and materials

certification; (c) inspection, sampling and testing of materials and manufactured products; (d) calibration and maintenance of equipment; (e) production process control; and (f) monitoring of environmental compliance. Quality Management also includes preparation of all Quality Management documentation required under the terms of the Contract.

- **“Quality Plan”** is the Design-Builder’s Programmatic Plan for (a) implementing the overall Quality Program and associated Quality Management activities, (b) meeting or exceeding the Contract’s quality requirements, and (c) coordinating Design-Builder’s Quality Management activities with those of the Department.
- **“Quality Program”** is the Design-Builder’s overall quality program and associated activities, including Quality Management, the Contract’s quality requirements, and the Quality Plan.
- **“Quality Proposal”** is the document submitted in response to the “Quality Proposal Submittal Information and Instructions”, as well as the Proposal Revision submitted in response to a request for Best and Final Offers (BAFOs).
- **“Quality Team”** is the Design-Builder Project Quality Manager, Design Quality Manager, Construction Quality Manager, and all personnel designated by the Design-Builder to perform Quality Management functions under the direction of the Project Quality Manager.
- **“Readiness-for-Construction Plans”** are the Plans submitted at RFC Design Review that must be accepted by the Department prior to the Design-Builder’s commencing any of the construction work represented therein.
- **“Readiness-for-Construction Specifications”** are the Design-Builder Specifications that describe the construction work represented in the RFC Plans (collectively, the “Readiness-for-Construction Plans and Specification”).
- **“Reference Documents”** are documents provided by the Department for informational purposes only.
- **“Regulated Work Area”** is the portion of each work location that is located below the Ordinary High Water Elevation (OHWE) or is otherwise regulated by the Tennessee Department of Environment and Conservation (TDEC), the U.S. Army Corps of Engineers (USACE) and/or the Tennessee Valley Authority (TVA). All issue permits with restrictions that apply to work within the Regulated work Area. Other authorizations, including the Biological Opinion or Letter of Concurrence from the Tennessee Wildlife Resources Agency (TWRA) and/or the United States Fish and Wildlife Service (USFWS), may also contain work restrictions relative to the area. Unless otherwise noted in the issued permits or authorizations, the entire area within the Regulated work Area is regulated by any in-water work restrictions, including the in-water work period, for the purposes of permit conditions, whether or not some of these areas become seasonally or periodically exposed as dry ground.
- **“Request for Proposals”** means the document issued by the Department in a single-phase process or the second phase of a two-phase selection process that describes the procurement process, forms the basis for the final proposals, and may potentially become an element of the Design-Build Contract.
- **“Request for Qualifications”** means the document issued by the Department in the first phase of a two-phase selection process that describes the project in enough detail to let

potential Design-Builders determine if they wish to compete and forms the basis for identifying (i.e., short listing) the most qualified Design-Builders.

- **“Responsible Engineer”** is the Tennessee-registered professional engineer, usually affiliated with the Design-Builder, who must sign and seal the Design Documents for which the Responsible Engineer is in “responsible charge” of the design.
- **“Review and Approval”** is the Department's reviews based solely on information provided by the Design-Builder and the Department's written response resulting from the Department Approval.
- **“Review and Comment”** is the Department's reviews, observations, and/or inspections based solely on information provided by the Design-Builder and the Department's written response resulting from such the Department actions. Review and Comment does not constitute Acceptance or Approval, and shall not be construed to waive or excuse Contract obligations or relieve the Design-Builder of any aspect of its obligation to perform the Contract according to its terms.
- **“Right-of-Way”** is a general term denoting land, property, or interest therein acquired for or devoted to a highway and its appurtenant structures.
- **“Safety Plan”** is the Programmatic Plan that sets out the Design-Builder's means of complying with its obligations in relation to Project safety.
- **“Schedule of Items”** is the list of Pay Items, their units of measurement, and prices.
- **“Scope of Work”** is the work to be performed to design and construct the Project, as described in the Contract.
- **“Short Listing”** or **“Short Listed”** means the narrowing of the field of potential Design-Builders through the selection of the most qualified Design-Builders who have responded to an RFQ.
- **“Single-Phase Selection Process”** means a procurement process where Price and/or Technical Proposals are submitted in response to an RFP without a RFQ or Short Listing.
- **“Sinkhole”** is a naturally occurring depression in a karst area characterized by inward drainage (inlets) accepting runoff from the surrounding area and having no visible surface outlet.
- **“Special Provisions”** are provisions inserted into a Contract revising the Standard Specifications or Supplemental Specifications and covering conditions peculiar to the individual Project.
- **“Stakeholders”** for the Project may include the following: (a) the State, primarily represented by the Department, including its subsidiary agencies and departments; (b) FHWA, for federal-aid projects; (c) other states and/or multi-state Authorities directly affected by or cooperating with the development of the Project; (d) federal and State regulatory and permitting agencies having jurisdiction over portions of the work or Project Site; (e) Native American Tribes and tribal members of Tennessee affected by the Project; (f) counties, cities, towns, and villages within the State directly affected by the Project; (g) other public or private entities impacted or potentially impacted by the Project, such as political subdivisions, Utility owners, transit systems, and railroads; and (h) other entities specifically identified by the Department.

- **“Standard Drawings”** are the current version of the Department-prepared detailed drawings for work or methods of construction that normally do not change from project to project.
- **“Standard Specifications”** means the current version of the Department’s Standard Specifications for Road and Bridge Construction.
- **“State”** is the State of Tennessee.
- **“Statement of Qualifications”** is the document(s) submitted by a Design-Builder in response to an RFQ that describes the qualifications and capability of the Design-Builder to perform the scope of services to be included in the Design-Build Contract.
- **“Stipend”** means a monetary amount paid to unsuccessful Design-Builders, at the discretion of the Department stated within the RFP, who have submitted responsive proposals in response to an RFP.
- **“Structures”** are Bridges, retaining walls, endwalls, cribbing, buildings, culverts, manholes, catch basins, drop inlets, sewers, service pipes, underdrains, foundation drains, pedestrian bridges, high mast luminaries, overhead sign support structures, and other similar features encountered at a work location or specified in the work to be performed, as well as all components and systems incorporated into a Structure.
- **“Subcontractor”** is any entity with whom the Design-Builder contracts to perform a portion of the work, with the exception of suppliers, vendors, and delivery/transport services. Subcontractor also refers to any Subconsultant.
- **“Supplemental Specifications”** means the current supplements to the Department’s Standard Specifications for Road and Bridge Construction.
- **“Technical Proposal”** means that portion of a Design-Build proposal which contains design solutions and other qualitative factors that are provided in response to an RFP.
- **“TDOT or the Department”** is the state of Tennessee, acting by and through the Tennessee Department of Transportation.
- **“Temporary Right of Entry”** is temporary legal authority to enter onto private property for a purpose specified in the permit.
- 
- **“Transportation Management Plan”** is the tool used to itemize and describe mitigation strategies for every work zone having the Department oversight and is used to plan transportation management strategies meeting both the Department’s goals and the requirements of the federal Work Zone Safety and Mobility Rule.
- **“Two-Phase Selection Process”** means a procurement process in which the first phase consists of Short Listing based on statements of qualifications submitted in response to an RFQ and the second phase consists of the submission of Price and Technical Proposals in response to a RFP.
- **“Uniform Act”** is the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (84 Stat. 1894; 42 USC 4601 et seq., Pub. L 91-646) and amendments thereto, including the Uniform Relocation Act Amendments of 1987, Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (1987 Amendments), Pub. L. 100-17, 101 Stat. 246-256.

- **“Warranty Bond”** is the approved security furnished by the Design-Builder's surety as a guaranty of the Design-Builder's performance of its warranty obligations.
- **“Weighted Criteria Process”** means a form of best value selection in which maximum point values are pre-established for qualitative and price components. Award is made to the Design-Builder with the highest total points earned.
- **“Wet-Weather Conveyance”** is a man-made natural watercourse, including natural watercourses that have been modified by channelization, that flow only in direct response to precipitation runoff in their immediate locality and whose channels are above the groundwater table and which do not support fish or aquatic life and are not suitable drinking supplies.
- **“Work Product”** is the Base Technical Concepts, Definitive Design, Drawings, Plans, Design-Builder Specification, and all other documents, analysis, computations, models, computer programs, and information obtained or developed for the Project or in performance of the Contract, in or capable of being reduced to tangible paper-based, electronic, audio, or video format, whether or not designated as a deliverable under the Contract.
- **“Working Plans or Working Drawings”** are those Plans prepared by the Design-Builder to specify particular details and procedures for construction of the Project.

ACRONYM	LISTAASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act	
ANSI	American National Standards Institute	
APWA	American Public Works Association	
ARAP	Aquatic Resource Alteration Permit	
ASTM	American Standard Test Method	
ATC	Alternate Technical Concept	
BMP	Best Management Practice(s)	
BTC	Base Technical Concept	
CCR	Contract Compliance Reviews	
CE	Categorical Exclusion	
CEI	Consultant Engineering and Inspection	
CFR	Code of Federal Regulations	
CPM	Critical Path Method	
CSS	Context Sensitive Solutions	
DB	Design-Build	
DBE	Disadvantaged Business Enterprise	
DBRC	Design-Build Review Committee	
DD	Definitive Design	
EA	Environmental Assessment	
EEO	Equal Employment Opportunity	
EIS	Environmental Impact Statement	
EPA	Environmental Protection Agency	
EPSC	Erosion Prevention and Sediment Control	
ESA	Endangered Species Act	
FEIS	Final Environmental Impact Statement	
FHWA	Federal Highway Administration	
FONSI	Finding of No Significant Impact	
FTA	Federal Transit Authority	
IA	Independent Assurance	
ITS	Intelligent Transportation Systems	
JV	Joint Venture	
LCC	Life Cycle Cost	
LIC	Local Interstate Connector	
LOS	Level of Service	
MOA	Memorandum of Agreement	
MOU	Memorandum of Understanding	

MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
NOA	Notice of Availability
NOC	Notice of Coverage (NPDES Permit)
NOI	Notice of Intent to Discharge (NPDES Permit)
NOT	Notice of Termination (NPDES Permit)
NPDES	National Pollutant Discharge Elimination System
NPDES CGP	NPDES Construction General Permit
NTP	Notice to Proceed
OJT	On-the-Job Training
PCA	Preconstruction Assessment
PCE	Programmatic Categorical Exclusion
PM	Program Manager
PS&E	Plans, Specifications, and Estimates
QA	Quality Assurance
QC	Quality Control
QCT	Quality Control Technician
RFC	Readiness-For-Construction
RFP	Request for Proposals
ROD	Record of Decision
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
SIA	State Industrial Access Road
SOP	Standard Operating Procedure
SOQ	Statement of Qualifications
SP	Special Provision
SSWMP	Statewide Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
TCA	Tennessee Code Annotated
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation or the Department
TMP	Transportation Management Plan
TSMP	Tennessee Stream Mitigation Program (TWRF)
TWRA	Tennessee Wildlife Resources Agency
TWRF	Tennessee Wildlife Resources Foundation
TVA	Tennessee Valley Authority
USC	United States Code
USCG	United States Coast Guard

USACE	U.S. Army Corps of Engineers
USDA/USDOA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
USDOC	U.S. Department of Commerce
USDOL	U.S. Department of Labor
USDOT	U.S. Department of Transportation (same as DOT)
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service (also F&WS or FWS)
USGS	U.S. Geological Survey
VE	Value Engineering
WBE	Women's Business Enterprise
WWC	Wet-Weather Conveyance

## **APPENDIX B**

# **ECOLOGICAL STUDIES**

## **INVESTIGATOR QUALIFICATIONS FOR PERFORMING ECOLOGY-RELATED WORK**

Unless otherwise specified by the Department, all personnel conducting field studies or preparing ecology reports must be degreed biologists - at least a bachelor's in biology (Biologist). Non-biologists may assist with studies only under the on-site supervision of a Biologist, and may not write reports. Unsupervised use of non-biologists will be allowed only with prior Department approval, and will usually be acceptable only for tasks such as water bottle collection not requiring habitat notes.

Personnel conducting wetland identifications and/or delineations must be a Biologist and submit evidence of wetland delineation training acceptable to the Department. The Department may, at its discretion, prohibit personnel in conducting studies where the training is considered inadequate or where follow-up studies indicate misidentification.

The Department may require participation or supervision by subject-matter experts such as chemists, geologists, expert botanists, or malacologists, etc. These will be specified on the **Contract Book 3 (Project Specific Information)**.

If a BA is necessary, it is usually included with the NEPA document. If a BA is necessary and not included, contact the Department Alternative Contracting Office for further guidance.

It is expected that the Design-Builder be familiar with the Endangered Species Act of 1973, amended, and with the Interagency Coordination regulations issued pursuant to the Act, and that the Biological Assessment (BA) be prepared in keeping with these guidelines.

The Design-Builder will not conduct any coordination with U. S. Fish and Wildlife Service (USFWS) as this is the responsibility of TDOT/Federal Highway Administration. All written communication with USFWS, all field meetings with USFWS, and substantive discussions of conclusions and mitigation will be arranged via the designated Department Biologist. The Design-Builder may be required by the designated Department Biologist to attend meetings with USFWS, either on-site or in the office. The designated Department Biologist will be present at all such meetings.

The Design-Builder may also be provided with the following letters, depending on what is indicated for federally and/or state listed species:

**For Federally Listed Species:** A USFWS species letter or the USFWS Memorandum of Agreement (the MOA applies only to small projects in areas not known to harbor protected species);

**For State Listed Species:**

Animals: A Tennessee Wildlife Resources Agency (TWRA) coordination response letter

When a species review indicates there are known occurrences for state listed animals near a project, the Design-Builder shall coordinate with the designated Department Biologist for directions on addressing these species with TWRA. TWRA will need the list of species that were noted during the database review as well as a brief project description. TWRA personnel will review this information and provide comments regarding the potential project impacts to the

listed species. TWRA may also provide direction and notes that will protect the species of concern.

Plants: A Tennessee Department of Environment and Conservation Division of Natural Areas (DNA) coordination response letter.

When the species review indicates state listed plants are near a project, the the Design-Builder shall coordinate with the designated Department Biologist for directions on coordination with DNA. If coordination is warranted, DNA will need the list of plant species that were noted during the database review as well as a brief project description. DNA personnel will review this information and provide comments regarding the potential project impacts to the listed species. DNA may also provide direction and notes that will protect the species of concern. Coordination with DNA may also be required if during the course of the field survey it is determined that a listed plant may be impacted by the proposed project.

If there are no records for listed plant or animal species within the area of review, coordination with TWRA or DNA will not be required and this will be indicated by the Department.

## INVESTIGATOR QUALIFICATIONS RECORD

**Project: County** \_\_\_\_\_  
**Route** \_\_\_\_\_  
**Termini** \_\_\_\_\_  
**PIN** \_\_\_\_\_  
**P.E. #** \_\_\_\_\_

**Investigator:**

**Name** \_\_\_\_\_  
**Title with Firm** \_\_\_\_\_  
**Firm Name** \_\_\_\_\_

**Tasks Completed on Project:**

**Education:** B.S/B.A \_\_\_\_\_ M.S / (B.A. or B.S) \_\_\_\_\_ PhD. \_\_\_\_\_

**Degree Specialization**

**Fisheries/Wetlands/Aquatics** \_\_\_\_\_  
**Botany** \_\_\_\_\_  
**Other** \_\_\_\_\_

**\* Repeat the above information for all investigators.**

The following information will be provided by the Department:

**ROUTINE ENVIRONMENTAL BOUNDARIES AND MITIGATION DESIGN REPORT**

This will discuss the results of an ecological evaluation and Form G prepared by the Department. It will identify any known wetlands, streams, protected species (state and federal), including any Biological Assessment, and mitigation needs. The Design-Builder shall review this report for any resources not identified. If any additional resources are found, the Design-Builder shall prepare an additional report for the Department to Review and Accept. If an amended BA or a new BA is required, it will be prepared using Scopes E and F unless otherwise noted.

The Design-Builder shall review all the Department material provided, including NEPA (Environmental) document maps, plans, species lists, species maps, USFWS species coordination letter, and other agency letters, as well as other materials available from other sources such as NRCS soils maps and species information available on the internet.

The field studies conducted by the Department identify any features and/or resources requiring documentation, avoidance, protection and/or mitigation. These field studies include, but are not limited to, identification of streams and wetlands, wet-weather conveyances, specialized habitats and protected species, areas of disturbance, etc. Any soil type shown on the NRCS soils map as hydric or having hydric inclusions will be specifically examined and documented. Habitat analysis to address protected species will be documented in the Ecological Field Data Sheet. If supplemental studies are necessary, the Design-Builder shall use Form G.

It is important that all areas be investigated and documented. The Design-Builder supplemental studies will update, and revise the Department supplied studies. The tabular format of Form G is intended to provide an easy means of identifying and evaluating new or changed information as a project progresses. Form G should, therefore, build upon previous project documents rather than replace them.

During the project plans development, the information provided in the Department supplied Form G information shall be used to accurately locate natural resources on the plans and determine impacts associated with the proposed alignment. Form G shall accompany permit applications and shall be used as a basis for erosion prevention and sediment control (EPSC) design. Form G is also used to initially document natural resource locations and potential impacts for smaller projects not requiring narrative reports.

\*\* Note that the study area for projects extends 100 feet either side of the proposed right-of-way and easement lines. Boundary surveys (e.g., wetland boundaries) should also extend at least 100 feet beyond the right-of-way and easement lines on the plans. The Design-Builder shall not show a closed boundary at the limit(s) of the survey for features that continue well beyond the project limits and proposed right-of-way (e.g., a wetland that extends beyond the study area limits).

Mark the plans according to the location and label using the map label (e.g., STR-1, WTL-2, WWC-1), any TierII/Tier III streams, 303(d) streams, or other important information (e.g., Wildlife Management Area, National Forest, State Park).

If the Design-Builder does not receive a letter indicating that there are no species, the Design-Builder shall contact the Department Alternative Contracting Office or the designated Department Biologist for further guidance.

In the event that specialized studies such as diving for mussels or mist-netting for bats is required in a Biological Assessment or by the Department supplied information, contact the Department Alternative Contracting Office or the designated Department Biologist for further guidance.

### **Trespassing & Safety**

Typically, the Department does not contact affected landowners for the specific purpose of conducting ecology studies; however, other divisions of the Department have likely been in contact with the landowners prior to the ecology study and the landowners are usually aware that a Department project may impact their property. You should not assume permission has been granted to trespass on a piece of property. If you are unable to secure permission to access a posted piece of property, are told to leave by a landowner or are unable to safely survey an area for other reasons, leave the project site and contact the appropriate Department regional biologist. Do not jeopardize your safety or the safety of others in order to complete a field survey.

## Supplemental Ecology Field Data Sheets

### Detailed instructions for completing the *Water Resources*, *Wetlands* and *Other Resource Features* field data sheets

This is comprised of three field data sheets which are designed to document Water Resources, Wetlands, Other Resource Features and Potential Mitigation Sites (streams and wetlands) associated with a project. All three of the field data sheets are intended to be completed in the field to ensure that the appropriate attributes for each resource feature (e.g., streams, wetlands) are documented. The *Water Resources* data sheet should be used to document streams, springs, seeps, ponds, quarries, lakes and wet weather conveyances. The *Wetlands* field data sheet should be used to document wetlands as well as potential mitigation sites – this data sheet does not replace the wetland determination form. The *Other Resource Features* data sheet should be used to document caves, rock shelters, sinkholes, specialized habitats, management areas, and protected species, as well as other features that may affect a project.

All known resource features associated with a project will be documented by the Department using the Form G field data sheet. If the Design-Builder is unable to survey/sample/measure certain aspects of a feature, note that information was unable to be gathered and indicate the reason (e.g. unable to survey fish/benthos/substrate due to high flow, near vertical stream banks etc.).

If Design-Builder believes that a stream looks “really nice” (this is a judgment call) but the stream is not included in the list of Tier II and Tier III streams in TN, indicate in the NOTES portion of the forms that the feature may be considered a Tier II or Tier III stream. This will indicate that the stream should be evaluated for Tier status prior to applying for permits.

**The Water Resources field data sheet is to be used to document streams, springs, seeps, ponds, quarries, lakes, and wet weather conveyances. For Water Resources, provide the following:**

- Classification:
  - Perennial stream, Intermittent stream, Wet Weather Conveyance or Ditch;
  - Pond, lake, or quarry;
  - Impoundment;
  - Spring (perennial or wet weather);
  - Seep;
  - Swale (sometimes used when a culvert is present, but a watercourse is not);
  - None (when a culvert is present, but no watercourse or other aquatic resource or channel is present – on plans label as “none – no feature present”);
  - Others - Contact designated Department Biologist.
- Blue-line on topo? (y/n): Is it marked as a blue-line on the topographic map? Indicate using “yes” or “no”.
- Defined Channel (y/n): Is a defined channel present?
- Channel Bottom Width: Indicate how wide the channel is, in feet. It could range from, for example, 3’ to 7’;
- Top of Bank Width: Indicate how wide the channel is at the top of its banks, with ranges if applicable; e.g., 7’ to 11’ (this is not Rosgen bankfull width);

- Bank Height: Indicate height of the banks, with ranges if applicable;
- Substratum: Provide approximate percentages of the composition of the substratum (boulders 60%, cobbles 20%, pebbles 10%, granules 10% **or** boulders 60%, Gravel 40%). Indicate if vegetation is growing in channel, or if dry leaf litter is present.
- Estimate width of the buffer within the present/proposed right-of-way. If the width of the buffer zone is similar upstream and downstream of the alignment (existing or proposed) list the average width of the buffer zone for each bank (LB & RB). If the width of the buffer zone differs greatly (>20 ft difference) upstream versus downstream of the alignment, indicate the width for each bank both upstream and downstream of the alignment (e.g., downstream LB & RB, upstream LB & RB). For streams that parallel a project, estimate width of the buffer within the present/proposed ROW.
- Water flow: Indicate if the water is flowing, and in general terms how fast/slow.
- Water depth: Provide depth in inches or feet, with ranges if applicable; e.g., 2” in riffles to 2’ in pools.
- Water width: Average width of water flow within the channel.
- Groundwater connection: If known or obvious, indicate yes/no. If not sure, indicate as unknown; use the “unknown” designation as little as possible and only after a thorough investigation has failed to determine whether there is a groundwater connection. This would include springs or seeps which provide water to other resources.
- Bank stability: Describe the left bank and right bank and their erosion potential.

#### STABILITY CATEGORIES

Stable

Eroding

Undercutting

Slumping/Sloughing

Roots Exposed

- Benthos: Indicate the presence/absence of benthic invertebrates, listing organisms at least to the ordinal or familial level [e.g., Trichoptera (Hydropsychidae, Helicopsychidae); chironomids; oligochaetes; mayflies (Baetidae, Caenis);]
- Fish: Indicate the presence/absence of fish, relative sizes, and species if possible.
- Algae: Indicate if algae are present or growing, and what general type (green, filamentous, etc.).
- Other aquatic life: Indicate if there are other organisms present (e.g., salamanders, turtles).
- Provide the 8-digit HUC (Hydrologic Unit Code) number and the corresponding name of that watershed. Check the Tennessee Department of Environment and Conservation web site, Watershed Approach, as well as the web under Hydrologic Unit Code, Hydrologic Unit Information, HUC name.txt.
- Include additional information which may be pertinent. Indicate if the stream is Tier II/III or on 303(d) list. For 303(d) streams, note pertinent reason(s) for inclusion on the list, especially habitat alteration, alteration in stream-side or littoral vegetative covers and siltation.

## STREAMS: DEFINITIONS AND DETERMINATIONS

### Definitions:

#### TDEC:

A **stream** means all waters of the State on the surface of the ground except wet weather conveyances; streams include, but are not limited to, creeks, rivers, canals, and tributaries.

A **perennial stream** is a natural watercourse (including modified natural watercourses) whose stream beds during normal hydrologic years are always below the groundwater table.

An **intermittent stream** is a natural watercourse (including modified natural watercourses) whose stream beds are above the groundwater table for a portion of the year. Intermittent streams are a broad class of streams which can be considered to include those that during normal hydrologic years flow continuously from 30 days to those that flow 364 days, although some flow < 30 days a year. An intermittent stream may or may not support fish and other aquatic life.

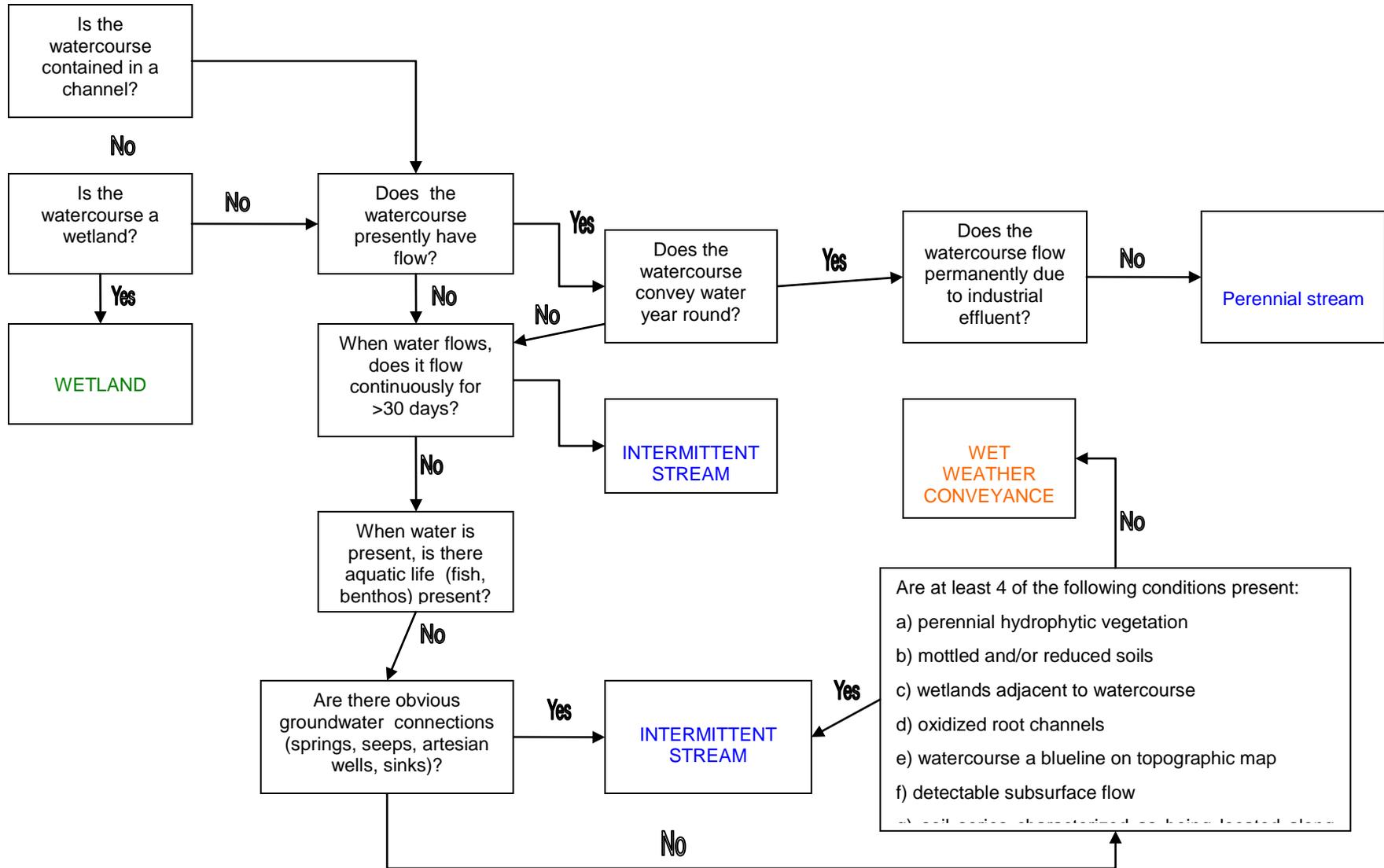
A **wet weather conveyance** is man-made or natural watercourses, including natural watercourses that have been modified by channelization, that flow only in direct response to precipitation runoff in their immediate locality and whose channels are above the groundwater table and which do not support fish or aquatic life and are not suitable for drinking water supplies.

#### USACE:

A **perennial stream** has flowing water year-round during a typical year. The water table is located above the streambed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

An **intermittent stream** has flowing water during certain times of the year, when groundwater provides for stream flow. During dry periods, it may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

An **ephemeral stream** has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.



**STREAM AND WET WEATHER CONVEYANCE DETERMINATION FLOW CHART**

### CHARACTERISTICS USED IN STREAM DETERMINATIONS

Characteristic	Perennial stream	Intermittent stream	Wet weather conveyance
Channel with well-defined boundaries	✓	✓	✓
Channel without well-defined boundaries		✓	✓
Flowing water	✓	✓	✓
No flow		✓	✓
Flow solely dependent on effluent discharges			✓
Flow not solely dependent on effluent discharges	✓	✓	✓
Algal growth	✓	✓	
No algal growth	✓	✓	✓
Benthos	✓	✓	
No benthos	✓	✓	✓
Fish	✓	✓	
No fish	✓	✓	✓
In-stream root wads/oxidized root channels	✓	✓	
No in-stream root wads/oxidized root channels		✓	✓
Connection to ground water	✓		
No connection to ground water		✓	✓
Channel diversity (sinuosity, riffles/runs/pools)	✓	✓	
No channel diversity	✓	✓	✓
Floodplain/bankfull bench present	✓		
No floodplain/bankfull bench	✓	✓	✓
Non-storm flow present June - October	✓		
Only storm flow present June - October		✓	✓
Rooted terrestrial plants in channel		✓	✓
No rooted terrestrial plants in channel	✓	✓	
Dry leaf litter in channel			✓
No dry leaf litter in channel	✓	✓	
Rain in past 48 hours and water flowing	✓	✓	✓
Rain in past 48 hours and water not flowing		✓	✓

## STREAM AND WET WEATHER CONVEYANCE DETERMINATION GUIDE

(to be used in conjunction with flowchart)

- (1) Watercourse is contained in a channel with defined boundaries ..... 2  
 Watercourse is not contained in a channel with defined boundaries ..... 5
- (2) Watercourse currently has flow on the surface or subsurface ..... 3  
 Watercourse currently does not have flow on the surface or subsurface..... 6
- (3) Watercourse continuously conveys water all year ..... 4  
 Watercourse does not continuously convey water all year ..... 6
- (4) Watercourse flows solely because of effluent discharges (including discharges from stormwater detention ponds) ..... **wet weather conveyance**  
 Watercourse flows are not dependent on effluent discharges..... **perennial stream**
- (5) Watercourse is a wetland ..... **wetland**  
 Watercourse is not a wetland ..... 2
- (6) Water flows continuously for >30 days during the year with a normal hydrological period (when water does flow) ..... **intermittent stream**  
 Water flows continuously for <30 days ..... 7
- (7) Stream indicator species (fish, benthos) are present ..... **intermittent stream**  
 Stream indicator species are absent ..... 8
- (8) Groundwater connections (e.g., springs, seeps, artesian wells, sinkholes) to the channel are obvious..... **intermittent stream**  
 No obvious groundwater connections to channel ..... 9
- (9) At least 4 of the following are present:
- perennial hydrophytic vegetation (facultative or wetter)
  - mottled/reduced soils are in the watercourse bed and/or adjacent to watercourse
  - wetlands are present adjacent to watercourse
  - riparian vegetation has oxidized root channels
  - watercourse is shown as blueline on USGS topographic map
  - subsurface flow can be detected
  - soil series is characterized as being located along streams, floodplains, or has a high water table in Soil Conservation Service county surveys
- ..... **intermittent stream**  
 Less than 4 of the above features are present ..... **wet weather conveyance**
- (All determinations require an individual ARAP except wet weather conveyance, which is covered under a general ARAP.)

**The Wetlands field data sheet is to be used to document wetlands. For Wetlands, provide the following:**

- Wetland type: List as Forested, Scrub-shrub, Emergent or Bog or a combination of these.
- Dominant wetland plant species: List 3 to 5 of the predominant plant species in the wetland. This list may be used to develop a list of species for mitigation of temporary impacts.
- Surface water connection: Note the presence of inflow or outflow. A wetland will be considered CONTIGUOUS if it has a connection to surface flow and ISOLATED if there is no connection to surface flow.
- Ground water connection: If known or obvious, indicate yes/no. If not sure, indicate as unknown; use the “unknown” designation as little as possible and only after a through investigation has failed to determine whether there is a groundwater connection. This would include springs or seeps which provide water to other resources.
- Average water depth: Provide depth in inches or feet, with ranges if applicable; e.g., 2” to 2’.
- Munsell soil color: Indicate the soil colors based on the Munsell Soil Color Charts.
- Approximate size: Estimate the size of the wetland, in acres. For extensive systems (e.g., west TN riverine systems) base the estimate on NWI maps of the area, if available.
- Portion affected - Permanent: Indicate approximate size of area that will be permanently filled by the project.
- Portion affected - Temporary: Indicate approximate size of area that will be temporarily affected by the project, typically considered the area between the fill slope and the edge of right-of-way (or other limits of the project).
- Width of Buffer Zone: This is an estimate of the width of the buffer zone along a wetland. A buffer zone, as defined by the Tennessee General NPDES Permit (Permit No. TNR100000) “is a strip of dense undisturbed perennial native vegetation, either original or re-established, that borders streams and rivers, ponds and lakes, wetlands, and seeps”. (Perennial native vegetation is not defined in the permit.)

**Wetland Determinations & Delineations:**

- Beginning wetland determinations & delineations are to be made using the 1987 Corps of Engineers Wetland Delineation Manual and the most current edition of the USDA, NRCS Field Indicators of Hydric Soils in the United States (USDA, NRCS 2003 Field Indicators of Hydric Soils in the United States, Version 5.01. G. W. Hurt, P. M. Whited, and R. F. Pringle (eds.) USDA, NRCS in cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX).
- Wetland Determination Data Forms, as modified by the Department, will be completed and submitted with all wetland determinations.
- To determine if a soil is considered hydric in Tennessee, refer to the Hydric Soils of Tennessee list, revised December 15, 1995.
- To determine the wetland indicator status for a plant, refer to the National List of Plant Species That Occur in Wetlands, using the regional or state level plant list. The national and regional lists are available online at: <http://www.nwi.fws.gov/plants.htm>.

**Marking Wetland Boundaries in the Field:**

- During the wetland delineation process, the wetland boundaries will be marked using vinyl roll flagging or wire stake flagging. This will facilitate verification of the wetland

boundaries by the regulatory agencies as well as locating and surveying the wetland boundary at a later date. Both the roll and wire stake flagging will be printed with “Wetland Delineation”.

**Verification of Wetland Boundaries:**

- Wetland delineations shall be confirmed by the Tennessee Department of Environment and Conservation (TDEC) and the Corps of Engineers (Corps). The Design-Builder will contact the designated Department Biologist to schedule a meeting with TDEC and the Corps for verification of the wetland boundaries.

**Calculating Wetland Impacts:**

- When estimating wetland impact quantities, calculate all wetland acreage within the fill slopes of the project as permanent wetland impacts. All wetland acreage within the project limits that is located between the fill slopes and the right-of-way is calculated as temporary wetland impacts.

**The Other Resources Features field data sheet is to be used to document caves, rock shelters, sinkholes, specialized habitats, management areas, protected species as well as other features that may affect a project.**

**Definitions:**

- Cave: small to medium entrance; reaches beyond the light zone; consists of small to large chambers or several interconnecting passages (or both); elevation is variable.
- Rock shelter: shallow caves or overhangs; wider than deep; usually found at cliff bases; relatively level floor; no part is beyond daylight; there are no passages.
- Sinkhole: depression in land surface generally in a limestone region, created by solution.

**The Non-Wetland Area field data sheet (Form X) is to be used to document an area that looks like a wetland, but upon investigation does not meet all of the requirements.**

**Supplemental Field Data Sheet Headings:**

In the heading for the Form G field data sheets, please complete the information as follows:

**Example:**

**County:** Davidson **Route:** SR-1 **LM:** N/A **PE No:** 19075-4218-04 **PIN:** 448160.00

**Contract No.:** CDB0701 **Project Description:** Widen from SR-48 to Peeler Rd.

**Date of survey:** 09/26/2005 **Biologist:** Your Name Here **Affiliation:** Name of Firm Here.

**Map:**

The location of all features listed on the field data sheet(s) is to be indicated on a separate 8½ x 11 inch, 7.5-minute USGS topographic map. If needed, the project area can be displayed on more than one page. Minimum information on the map(s) includes the following:

- county name
- quadrangle name
- project name
- proposed alignment
- north arrow
- approximate scale
- date of field survey
- PE number; PIN
- beginning/end of project with station numbers

All features listed on the field data sheet(s) will be indicated on the topo map according to location and labeled using the map label (e.g., STR-1, WTL-2, WWC-1), with its corresponding color. If yellow is not distinctive, use a similar color such as orange, but only on the topographic map (not on the marked-up plans), and make a note to that effect in Section 11 (Notes section).

**Photos:**

Provide **at least** one photo (hardcopy and electronic) for each feature (e.g., stream, wet weather conveyance, sinkhole, cave, wetland). For large features (rivers, wetlands) it is recommended that more than one photo be taken and included (such as standing on bridge looking upstream [east] and downstream [west], or where a stream that will be affected flows into a river that will be affected). If the feature needs to be verified by TDEC/USACE, include several photos which may enable a decision to be made without a site visit.

**Label photos with a minimum of the following information:**

- County
- Name of feature (name, map label)
- Direction of photo
- Date (month, day, year) photo was taken
- Location of photo
- Corresponding photo number from Attachment G

Example:

Photo 2: Hamilton County, standing on SR 321 bridge, looking upstream (south) at Little Wolftever Creek (S-2); April 2004

**Feature Labels:**

Below is the complete list of feature labels to be used when completing the supplemental field data sheets, the Form G map and on the plan sheets for identification. Detailed instructions on the use of the labels are provided in the following sections: Field Data Sheets - Water Resources, Wetlands & Other Resource Features.

<b>Map Label</b>	<b>Feature Description</b>
<b>STR</b>	<b>Perennial or intermittent stream</b>
<b>SPG</b>	<b>Spring</b>
<b>SEP</b>	<b>Seep</b>
<b>PND</b>	<b>Pond, quarry</b>
<b>LAK</b>	<b>Lake</b>
<b>WFL</b>	<b>Waterfall/cascade</b>
<b>WWC</b>	<b>Wet weather conveyance</b>
<b>WTL</b>	<b>Wetland</b>
<b>WMS</b>	<b>Potential wetland mitigation site</b>
<b>CAV</b>	<b>Cave</b>
<b>RKS</b>	<b>Rock shelter</b>
<b>SNK</b>	<b>Sinkhole</b>
<b>SPH</b>	<b>Specialized habitat, management area</b>
<b>PSP</b>	<b>Protected Species</b>
<b>Others</b>	<b>Contact designated Department Biologist</b>

County: \_\_\_\_\_ Route: \_\_\_\_\_ LM: \_\_\_\_\_ PE No.: \_\_\_\_\_ PIN: \_\_\_\_\_

Contract No.: \_\_\_\_\_ Project Description: \_\_\_\_\_

Date of survey: \_\_\_\_\_ Biologist: \_\_\_\_\_ Affiliation: \_\_\_\_\_

<b>1-Station:</b> from plans		
<b>2-Map label</b>		
<b>3-Potential impact</b>		
<b>4-Feature name</b>		
<b>5-Feature description:</b>		
what is it		
blue-line on topo? (y/n)		
defined channel (y/n)		
channel bottom width		
top of bank width		
bank height		
substratum		
riffle/run/pool		
width of buffer zone LB, RB		
water flow (y/n)		
water depth		
water width		
groundwater connection		
bank stability LB, RB		
dominant species LB, RB		
overhead canopy (%)		
benthos		
fish		
algae		
other aquatic life		

habitat assessment score			
photo number (s)			
rainfall information			
<b>6-Watershed</b>	HUC code		
	HUC name		
<b>7-Determination:</b>			
<b>8-Determination:</b> Confirmed? By?			
<b>9-Mitigation:</b> to be included in design			
<b>10-Notes</b> Indicate if stream is Tier II/III or on 303(d) list			

County: \_\_\_\_\_ Route: \_\_\_\_\_ LM: \_\_\_\_\_ PE No.: \_\_\_\_\_ PIN: \_\_\_\_\_

Contract No.: \_\_\_\_\_ Project Description: \_\_\_\_\_

Date of survey: \_\_\_\_\_ Biologist: \_\_\_\_\_ Affiliation: \_\_\_\_\_

<b>1-Station: from plans</b>			
<b>2-Map label</b>			
<b>3-Potential impact</b>			
<b>4-Feature name</b>			
<b>5-Feature description:</b>			
wetland type*			
dominant wetland			
plant species			
surface water connection (y/n)**			
ground water connection (y/n/unkn)**			
avg. water depth			
Munsell soil colors			
approximate size (acres)			
portion affected (acres) (permanent)			
portion affected (acres) (temporary)			
width of buffer zone (ft)			
photo number (s)			
<b>6-Watershed</b>	HUC code		
	HUC name		
<b>7-Determination:</b>			
<b>8-Determination:</b> Confirmed? By?			
<b>9-Mitigation:</b> to be included in design			
<b>10-Notes</b>			

\* Forested, Scrub-shrub, Emergent or Bog;

\*\* Y = Contiguous; N= Isolated; Unkn = Unknown, connection to ground water cannot be determined

(Caves/Rock Houses; Sinkholes; Specialized Habitats; Other

County: \_\_\_\_\_ Route: \_\_\_\_\_ LM: \_\_\_\_\_ PE No.: \_\_\_\_\_ PIN: \_\_\_\_\_

Contract No.: \_\_\_\_\_ Project Description: \_\_\_\_\_

Date of survey: \_\_\_\_\_ Biologist: \_\_\_\_\_ Affiliation: \_\_\_\_\_

<b>1-Station: from plans</b>			
<b>2-Map label</b>			
<b>3-Potential impact</b>			
<b>4-Feature name</b>			
<b>5-Feature description:</b>			
what is it			
portion affected			
approximate size			
photo number			
other			
<b>6-Watershed</b>	HUC code		
	HUC name		
<b>7-Determination:</b>			
<b>8-Determination:</b> Confirmed? By?			
<b>9-Mitigation:</b> to be included in design			
<b>10-Notes</b>			

## MITIGATION

Once the all ecological field studies have been completed and verified and the natural resource features documented, the Design-Builder must assess the project related impacts and determine if mitigation is required.

The mitigation requirements must then be documented via the Natural Resource Mitigation Form (Form J), which is used to:

1. Identify specific locations where mitigation or in-kind replacement is required for a stream, wetland, listed species or other feature.
2. Transmit to the project designer the information that needs to be placed on the plans in a clear, understandable format with no extraneous information.
3. Provide plan view and cross-section sketches of mitigation features needed, placed correctly on copies of plans sheets to allow proper mitigation of natural resource impacts.

The tables, sketches and notes attached are for routine mitigation. This typically includes relocation of short or very small stream reaches, measures to minimize impacts to wetlands and avoidance measures or protection notes for species. Very large mitigation needs identified by the consultant (relocation of ½ mile of a large stream, requiring a geomorphic design or for on-site restoration of a wetland) should be coordinated with the designated Department Biologist.

Only resource features requiring mitigation are to be listed on the Form J Natural Resource Mitigation Form. If a project does not require mitigation DO NOT SUBMIT a FORM J.

## NATURAL RESOURCE MITIGATION FORM

**Calculate permanent & temporary wetland impacts & provide to designated Department Biologist and copy the Department Alternative Contracting Office:**

### **STREAMS:**

For stream relocations and stream/culvert transitions, regardless of length (unless a full geomorphic relocation design is necessary) provide a plan view and one or more cross-sections based on the Standard Stream Mitigation instructions. It is expected that the Standard Stream Mitigation instructions and any implementation notes, planting scheme, etc would be applied to Form J. The Design-Builder should give attention to the desirability or need for features such as rip-rap, channel liners, etc.

For stream crossings where a multi-barrel culvert is necessary, flow should be directed into a single barrel of the culvert; if obvious, indicate which barrel of the culvert should receive the flow in the plans. The purpose of this is to prevent over-widening of the stream channel at the culvert, which is especially critical at periods of low stream flow.

For plantings along relocated stream channels, plant two alternating rows of tree or shrub species on both sides of the new channels; the first row shall be bare root seedlings that are planted on the channel slope, centered on the midpoint of the slope (if appropriate, black willow stakes may be substituted for the seedlings – contact the designated Department biologist for guidance).

### **WETLANDS:**

Sketch any berm, clay plugs, haul road/access requirements, etc that might be necessary to protect an existing or remaining portion of wetland from filling, draining, or other impacts. If a full on-site wetland replacement is required, the Design-Builder shall provide a full plan view and cross-section showing elevations of all excavations and structures on contour sheets with contour intervals appropriate to the situation; typically this is a six inch contour. Geotechnical studies are required for off-site mitigation areas. In addition, provide any implementation/sequencing notes necessary.

### **SPECIES:**

The Design-Builder shall provide implementation or protection notes on plans. If such notes are included in the Biological Assessment, they should be the same notes that are placed on the plans.

### **List of Plant Species**

The list of species that are to be planted at an impact site (stream relocation, temporary wetland impact, etc) is to be based on the species that are common to the site being affected - but also consider water levels during and following construction when selecting species. Small trees and shrubs may be substituted for the larger tree species in areas where impacts may be near a utility line or similar overhead feature. Tree species are not required for emergent and shrub-dominated wetlands.

### Standard Stream Mitigation (if required)

Apply these measures to all applicable streams listed in Form J. Duplicate the length, bottom channel width, elevations, side slopes, meander wavelength, and curvature of the existing channels to the extent possible. Each channel should transition smoothly from its beginning elevation to its tie-in elevation in the receiving stream, without profile drops or jumps. Locate the new channels in as flat an area as possible to avoid unusually high side slopes; this may require some additional right-of-way. Channel length placed in spring-boxes or culverts counts as part of the new channel length (but may require off-site compensatory mitigation that would not be required for an open channel). Channel side slopes should mimic existing channel side slopes, if possible, and be stabilized using appropriate BMPs – the use of rip-rap should be avoided if possible. If rip-rap is required, the rip-rap should be imbedded into the soil so that the top of the rip-rap is flush with the bottom and sides of the channel.

Plant two alternating rows of tree or shrub species on both sides of the new channels; the first row shall be bare root seedlings that are planted on the channel slope, centered on the midpoint of the slope. Along the top of bank, 3-gallon container-grown trees are to be planted within one foot of the top of bank, unless directed otherwise.

Rip-rap, if required, should be limited to ends of culverts. All relocated channels and their accompanying mitigation features, including trees, are to be placed in right-of-way rather than easements; this may require acquisition of additional right-of-way.

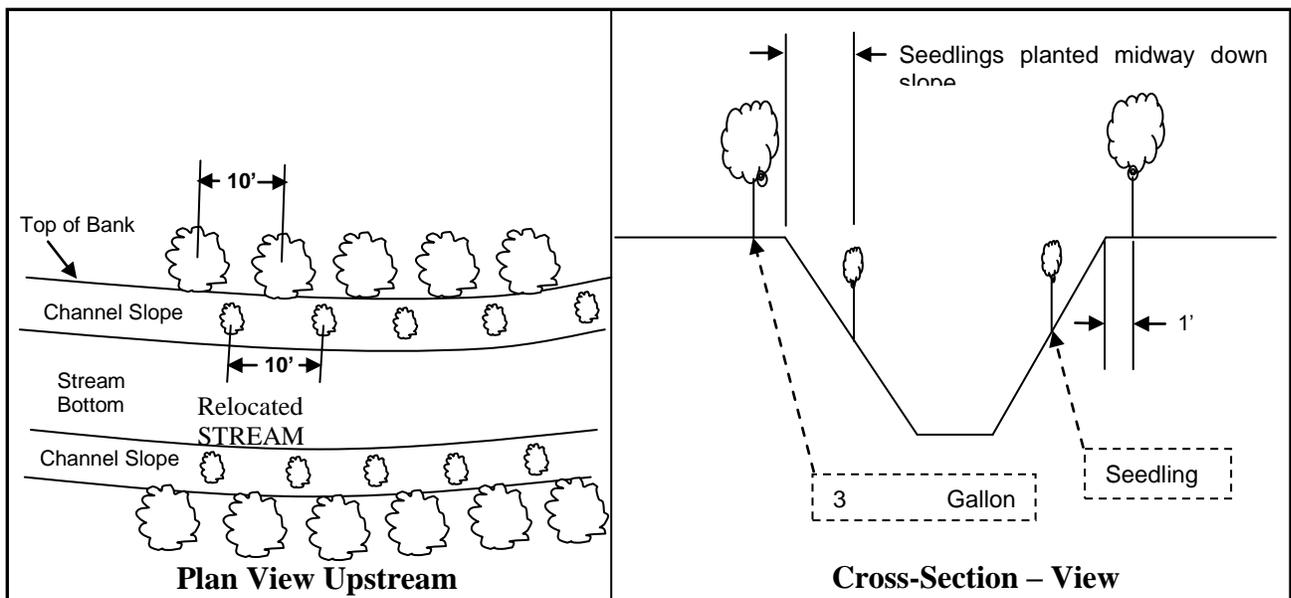
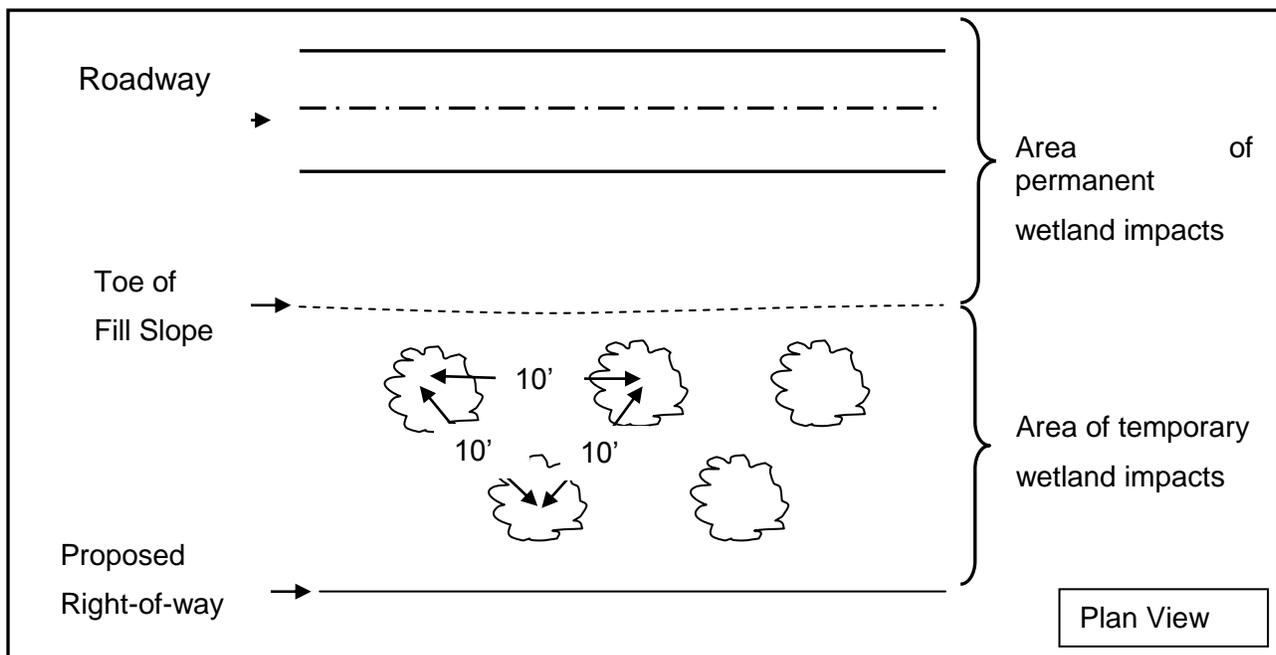


Figure 1. Spacing for planting along relocated stream.

### Standard On-site Mitigation for Temporary Wetland Impact Areas (if required)

Apply these measures to all applicable temporary wetland impact areas listed in Form J. For temporary wetland impact areas, remove the top six to 12 inches of topsoil and stockpile it until construction is complete. Once construction activities are completed, restore all temporary wetland impact areas to pre-construction conditions. This includes removing haul roads (if applicable), restoring the site to the original (pre-construction) elevation and spreading stockpiled topsoil back over the wetland site. The area of temporary impacts will then be seeded, covered with straw and planted with tree seedlings to stabilize the site. Seedlings will be planted on 10-foot centers. Place a note on the present and proposed layout sheets to protect wetland areas located beyond the limits of the fill slope and proposed right-of-way.



Tree planting scheme for temporary wetland impact areas

Topsoil is to be removed from all areas of temporary wetland impacts and stockpiled prior to construction.

Upon completion of construction activities, temporary haul roads are to be removed. Excavated material from the haul roads is to be disposed of as directed by the Department.

Upon completion of construction activities, all temporary wetland impact areas are to be restored to pre-construction contours and the stockpiled wetland topsoil spread to restore these areas to pre-construction elevation.

## CHANNEL RELOCATION SEQUENCE AND IMPLEMENTATION FOR RELOCATED STREAM CHANNELS

1. The new channel shall be excavated and stabilized during a low-water period. Rip-rap (only when hydraulically necessary), seeding, and sod shall be installed immediately following channel completion. Trees shall be installed in the first planting season following channel excavation. Water shall be diverted into the new channel only after it is completely stabilized, and only during a low-water period. Stabilized means that all specified rock and erosion control blanket or flexible channel liner is in place, and seeding and sod are in place and established.
2. CHANNEL RELOCATION SEQUENCE
  - a. Flag edge of the new channel top bank prior to clearing. Do not clear large trees in position to shade the new channel. Leave as many trees and shrubs as possible between toe of the new highway slope and the stream.
  - b. Excavate the new channel "in the dry" by leaving areas of undisturbed earth (diversion berms) in place at both ends.
  - c. Shape channel to specifications shown. Remove loose soils and debris.
  - d. Place topsoil, erosion control blanket or flexible channel liner, seed, and sod as specified.
  - e. Remove diversion berms, beginning with the most downstream, banks and bottom elevation of the old channel should transition smoothly into the new channel. The elevations of the new channel bottom at each end of the relocation sequence should match the elevations of the existing channel, and a steady percent slope should be maintained throughout the relocated channel centerline or as specified.
  - f. Install trees according to Standard Specifications Section 802.
3. Only rip-rap for hydraulic needs should be used in the relocated channel reach.
4. Requests by any agency that would require the modification of channels, ditches, elevations, rip-rap or any other stream mitigation items associated with the channel relocations shall be included in the lump sum Contract Amount and shall not constitute a Change Order.

### TREES

Tree species or sizes shall be approved by the designated Department Biologist. Concerning **stream mitigation**, trees shall be of the variety approved and first quality. Concerning **temporary wetland mitigation**, trees shall be of the variety approved, well branched, **bare root (roots must be kept moist at all times)**, and first quality. No clones or cultivars will be accepted. Any found to be incorrect species, or improperly planted, at any time prior to termination of the contract shall be removed and replaced at the Design-Builder's expense. Stakes and wires shall be removed immediately prior to Final Acceptance, unless otherwise directed by the Department.

The Design-Builder must arrange several months ahead of time to obtain the correct tree species, as some may require some time to locate.

All trees planted shall be wrapped as per Section 802.07 of the Department Standard Specifications. Trees shall be watered as required through the period of establishment to ensure survival.

**Natural Resources Mitigation Sketches/Information**

County: \_\_\_\_\_ Route: \_\_\_\_\_ LM: \_\_\_\_\_ PE No: \_\_\_\_\_ PIN: \_\_\_\_\_

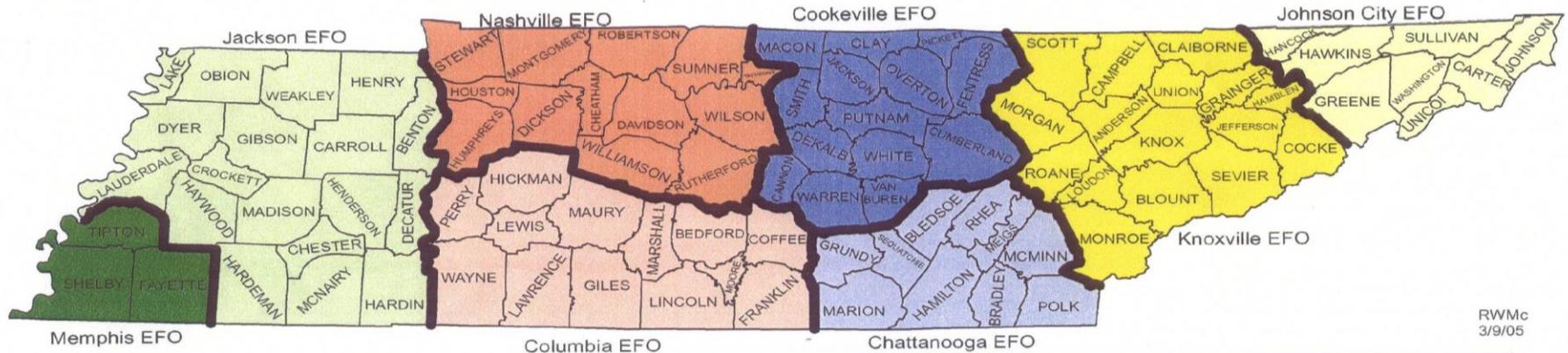
Contract No.: \_\_\_\_\_ Project Description: \_\_\_\_\_

Date of survey: \_\_\_\_\_ Biologist: \_\_\_\_\_ Affiliation: \_\_\_\_\_

Station	Map label	Attachments: Marked-up plans sheet (A); notes (B); mitigation plan (C) attached	Calculate permanent & temporary wetland impacts & provide to the Department ("X")	Apply "standard" stream relocation configuration & instructions ("X")	Survey boundaries as flagged in field ("X")	General notes and/or specific changes requested

**Tennessee Department of Environment and Conservation  
Environmental Field Offices  
1-888-891-TDEC**

<p>Jackson Environmental Field Office  1625 Hollywood Drive  Jackson TN 38305 EFO Director - Rudy Collins (731) 512-1339 WPC Mgr - Pat Patrick (731) 512-1301 Administrator - Carol Pollan Env. Coord. - Vaughn Cassidy</p>	<p>Nashville EFO (EFO-N) 711 R.S. Gass Blvd Nashville, TN 37243 ph (615) 687-7000 fax (615) 687-7078 EFO Director - Brenda Apple (615) 687-7033 WPC Mgr - Joe Holland (615) 687-7020 Administrator - Steve Janes Env. Coord. - Charles Jobe</p>	<p>Cookeville EFO (EFO-CK) 1221 South Willow Ave Cookeville, TN 38506 ph (931) 432-4015 fax (931) 432-6952 EFO Director - Jimmie Lee Clark (931) 432-7614 WPC Mgr - Rob Howard (931) 432-7632 Administrator - D. Jan Tollett Env. Coord. -</p>	<p>Johnson City EFO (EFO-JC) 2305 Silverdale Road Johnson City, TN 37601 ph (423) 854-5400 fax (423) 854-5401 EFO Director - Mark Braswell (423) 854-5459 WPC Manager - Andrew Tolley (423) 854-5446 Administrator - Judy Jarrett Env. Coord. - Jan Compton</p>
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RWMc  
3/9/05

<p>Memphis EFO (EFO-M) Suite E-645, Perimeter Park 2510 Mount Moriah Rd Memphis, TN 38115 ph (901) 368-7939 fax (901) 368-7979 EFO Director - Jim Chaney (901) 368-7990 WPC Mgr - Terry Templeton (901) 368-7959 Administrator - Bill Relker Env. Coord. - Vaughn Cassidy</p>	<p>Columbia EFO (EFO-CL) 2484 Park Plus Drive Columbia, TN 38401 ph (931) 380-3371 fax (931) 380-3397 EFO Director - Joe Holmes (931) 840-4156 WPC Mgr - Tim Wilder (931) 840-4170 Administrator - Shelia Woodard Env. Coord. - John Bowers <i>Tim Wilder</i></p>	<p>Chattanooga EFO (EFO-CH) Suite 550 State Office Bldg 540 McCallie Avenue Chattanooga, TN 37402 ph (423) 634-5745 fax (423) 634-6389 EFO Director - WPC Mgr - Richard Urban (423) 634-5702 Administrator - Andra Kelley Env. Coord. -</p>	<p>Knoxville EFO (EFO-K) Suite 220, State Plaza 2700 Middlebrook Pike Knoxville, TN 37921 ph (865) 594-6035 fax (865) 594-6105 EFO Director - Phil Chambers (865) 594-5524 WPC Mgr - Paul Schmierbach (865) 594-5529 Administrator - Mark Sweat Env. Coord. - Mark Penland</p>
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## U.S. Army Corps of Engineers, Memphis District

U.S. Army Corps of Engineers, Memphis District  
 Regulatory Branch  
 Clifford Davis Federal Building  
 Room B-202  
 Memphis, TN 38103-1894  
 Phone: 901-544-3471  
 FAX: 901-544-0211

USACE Regulatory Program: The Memphis District Regulatory Staff covers eastern Arkansas, western Tennessee and Kentucky, the bootheel of Missouri, the southern tip of Illinois, and the northern part of Mississippi (see map below).

Portions of the following Tennessee Counties are within the Nashville District (Western Section) and the Memphis District boundaries:

**Carroll, Chester, Henderson, Henry, McNairy**

### Memphis District Contacts:

Roger Allan	901-544-3684
Tom Skelton	901-544-3468



**U.S. Army Corps of Engineers, Nashville District**

U.S. Army Corps of Engineers, Nashville District  
 Regulatory Branch  
 3701 Bell Road  
 Nashville, TN 37214-2660  
 Phone: 615-369-7500  
 FAX: 615-369-7501

USACE Regulatory Program: The Nashville District staff covers parts of Alabama, Kentucky, Mississippi and Tennessee (see map below). Nashville's Regulatory Branch is divided into two sections, Eastern Section and Western Section.

The Following Tennessee Counties are within the Nashville District (Eastern Section):

**Anderson, Bledsoe, Blount, Bradley, Campbell, Carter, Claiborne, Clay, Cocke, Cumberland, De Kalb, Fentress, Grainger, Greene, Hamblen, Hamilton, Hancock, Hawkins, Jackson, Jefferson, Johnson, Knox, Loudon, McMinn, Meigs, Monroe, Morgan, Overton, Pickett, Polk, Putman, Rhea, Roane, Sequatchie, Sevier, Scott, Smith, Sullivan, Unicoi, Union, Van Buren, Warren, Washington, White**

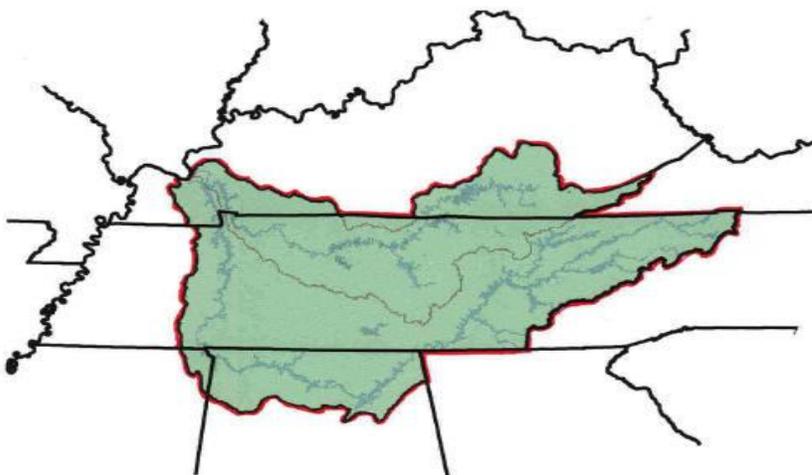
The Following Tennessee Counties are within the Nashville District (Western Section):

**Bedford, Benton, Cannon, Cheatham, Coffee, Davidson, Decatur, Dickson, Franklin, Giles, Grundy, Hardin, Hickman, Houston, Humphreys, Lawrence, Lewis, Lincoln, Macon, Marion, Marshall, Maury, Montgomery, Moore, Perry, Robertson, Rutherford, Stewart, Sumner, Trousdale, Wayne, Williamson, Wilson**

**Nashville District Contacts:**

Eastern Section		Western Section	
Marty Tyree	615-369-7514	Kathleen Kuna	615-369-7506

**Nashville District Service Area**



**NASHVILLE DISTRICT REGULATORY BOUNDRIES**

## Hydrologic Unit Codes (HUC) for Tennessee

<b><u>Group 1 (red)</u></b>		<b><u>Group 4 (dark blue)</u></b>	
Nonconnah	08010211	Hatchie (Lower Hatchie)	08010208
S. F. Forked Deer	08010205	Little Hatchie (Upper Hatchie)	08010207
Harpeth	05130204	Red	05130206
Stones	05130203	Barren	05110002
Emory	06010208	Lower Cumberland (Old Hickory Lake)	05130201
Watts Bar	06010201	Upper Cumberland (Cordell Hull Lake)	05130106
Wautauga	06010103	Obey	05130105
Conasauga	03150101	S. F. Cumberland	05130104
Ocoee	06020003	Upper Cumberland	05130101
<b><u>Group 2 (yellow)</u></b>		Powell	06010206
Loosahatchie	08010209	Upper Clinch	06010205
N. F. Forked Deer	08010204	Holston	06010104
Pickwick Lake	06030005	TN (Middle TN-Chickamauga)	06020001
Lower Elk	06030004	<b><u>Group 5 (pink)</u></b>	
Upper Elk	06030003	Mississippi	08010100
Wheeler Lake	06030002	N. F. Forked Deer	08010206
Collins	05130107	Obion	08010202
Caney Fork	05130108	Obion S. F.	08010203
Hiwassee	06020002	Lower Cumberland (Lake Barkley)	05130205
Ft. Loudon Lake (Watts Bar)	06010201	Lower Cumberland (Cheatham Lake)	05130202
S. F. Holston	06010102	Guntersville Lake	06030001
<b><u>Group 3 (light blue)</u></b>		Sequatchie	06020004
N. F. Holston	06010101	Lower French Broad	06010107
S.F. Holston	06010102	Upper French Broad	06010105
Wolf	08010210	Pigeon	06010106
TN Western Valley (KY Lake)	06040005	Nolichucky	06010108
TN Western Valley (Beech) (Lower TN-Beech)	06040001		
Buffalo	06040004		
Lower Duck	06040003		
Upper Duck	06040002		
TN (Middle TN-Chickamauga)	06020001		
Little TN (Lower Little TN)	06010204		
Lower Clinch	06010207		



## GEOGRAPHIC INFORMATION SYSTEM (GIS)

### I. Data Requirements

#### GIS Deliverables:

Topologically accurate GIS products compatible with the Department's Enterprise GIS database will be submitted where geospatial or location data are to be collected by the Design-Builder. Acceptable GIS formats include the following:

- Oracle's native spatial format – SDO\_GEOMETRY – GIS data is preferred to be delivered as an Oracle Spatial export file containing all relevant indexes and associated tables both spatial (SDO\_GEOMETRY) and non-spatial information.
- Any ESRI format data is acceptable (e.g. personal geodatabase, shapefile) as long as accompanied by clear instructions to convert into Oracle spatial SDO\_GEOMETRY format and is accompanied by associated projection files (.prj) or information.
- Intergraph's GeoMedia Access Warehouse format is acceptable with clear instructions to convert into Oracle spatial SDO\_GEOMETRY format and is accompanied by associated projection files (.csf) or information.

GIS deliverables will be submitted in State Plane 1983 Coordinate System – FT – Zone 4100 Tennessee with a North American Datum (NAD) 1983 projection. The Design-Builder will also provide metadata to meet the Department's minimum metadata standards compliant with the Federal Geographic Data Committee's Content Standard for Digital Geospatial Metadata, Version 2-FGDC-STD-001-1998 (<http://www.fgdc.gov/metadata/constan.html>). GIS deliverables shall be submitted on Compact Disk(s) with appropriate documentation to facilitate use by Department personnel.

#### GPS Requirements:

Data collected using Global Positioning System (GPS) equipment will be captured and stored using Geographic Decimal Degrees (Lat/Long) – WGS84. Minimum precision for GPS coordinates shall be three meters or less and maximum confidence error (PDOP – Position Dilution of Precision) for captured data shall be a 6 or less. Post processing of collected will be required as well to ensure greater accuracy, unless otherwise noted.

### II. File Naming

Each shapefile and its corresponding data points must have a unique identification number. Data within the database will become untrackable if file naming is not held to strict and consistent standards. The correct file format will contain the county number, the project pin number and the file type. **No deviation from this standard will be accepted.** The correct file format is as follows:

Shapefiles: (county)(PIN)(file type)

Ex. 19100361.00wetland

County      PIN      File type

Data points: (county)(PIN)(map label)

Ex. 19100361.00S1

County      PIN      File type

County	PIN	File type
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If multiple data points are taken for the same feature, they will be labeled with consecutive letters.

Ex. 19100361.00S1  
 19100361.00S1A  
 19100361.00S1B  
 19100361.00S1C

The appropriate abbreviations for file types are listed below:

Streams – S-x, Wetlands – W-x, Wet weather conveyances – WWC-x, Springs – SPR-x, Ponds – P-x, Lakes – L-x, Endangered Species – SP-x, Caves – CV-x, Sinkholes – SK-x, Critical Habitat – CH-x

### **III.Data Collection**

All data will be collected using points. No polygons or lines are to be used (unless otherwise directed) in order to simplify the final data product. A sufficient number of points should be taken for each feature to accurately represent “real world” conditions. For example, a small wetland covering only 0.1 acres may require only one point, but a wetland covering several acres with irregular geometry will require multiple points. Streams will vary considerably in the number of points required to accurately map them. For example, if a stream crosses the project at a 90<sup>0</sup> angle, three points (one at the crossing and one on each side of the alignment) would most likely be adequate, but if the stream crosses at less of an angle and/or meanders in the vicinity of the project, additional points may be necessary.

Multiple points are primarily used to convey the spatial quality of features, but they may also be necessary in order to document transitioning conditions within a feature. For example, a perennial stream that transitions to an intermittent stream. Additional data points should be taken not only to convey the spatial relationship of the stream to the project, but also to note the transition from perennial to intermittent.

**GIS Deliverables Table**

Contract No.: \_\_\_\_\_ Project: County, Project Termini

County Number: 19 PIN: 100361.00 P. E. Number: 63374-1214-04

Date: \_\_\_\_\_ Review completed by: \_\_\_\_\_ Agency: \_\_\_\_\_

Unique Feature ID Number(s)	Number of Points Associated With Feature	Feature Type	Feature Name	Form G Map Label	Potential Project Impact	Data Format	PDOP Accuracy	Post Processing
19100361.00S1 19100361.00S1A 19100361.00S1B 19100361.00S1C	4	Perennial Stream	Big Creek	S-1	Crossing	ESRI Shapefile	5	Yes
19100361.00W1 19100361.00W1A 19100361.00W1B 19100361.00W1C 19100361.00W1D 19100361.00W1E	6	Wetland	N/A	W-1	Fill	ESRI Shapefile	4	Yes



## Attribute Tables

<b>Wetland Mitigation Site</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Isolated (Y/N)	Isolated	Text - Y or N
Watershed	Watershed	Text - 40 characters
8-Digit HUC Code	HUC_Code	Numerical - 9 characters
Munsell Soil Colors	Muns_Soil	Text - 30 characters
Hydrology Source	Hyd_Source	Text - 50 characters
Vegetative Species	Veg_Spec	Text - 100 characters
Restoration Necessary	Rest_Nec	Text - 250 characters
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Seeps</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Potential Impact	Pot_Impact	Text – choose from - None, Springbox, Runoff
Watershed	Watershed	Text - 40 characters
8-Digit HUC Code	HUC_Code	Numerical - 9 characters
Multiple Seeps Present	MultSePres	Text - Y or N
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Lakes</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Potential Impact	Pot_Impact	Text – choose from - None, Drain, Fill, Drain & Fill
Inlet or Outlet to Waters of the	Inl_or_Out	Text – choose from - None, Inlet,

<b>Lakes</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
State		Outlet, Both
Mitigation Required	Mit_Req	Text - Y or N
Watershed	Watershed	Text - 40 characters
8-Digit HUC Code	HUC_Code	Numerical - 9 characters
Scenic Feature	Scen_Feat	Text - 150 characters
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Ponds</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Potential Impact	Pot_Impact	Text – choose from - None, Drain, Fill, Drain & Fill
Inlet or Outlet to Waters of the State	Inl_or_Out	Text – choose from - None, Inlet, Outlet, Both
Springs Present	Spr_Prest	Text - Y or N
Mitigation Required	Mit_Req	Text - Y or N
Watershed	Watershed	Text - 40 characters
8-Digit HUC Code	HUC_Code	Numerical - 9 characters
Scenic Feature	Scen_Feat	Text - 150 characters
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Streams</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Stream Type	StreamType	Text – choose from - Perennial, Intermittent, Ephemeral
Form G Label	FormGLabel	Text - 5 characters
Potential Impact	Pot_Impact	Text – choose from - Crossing, Relocation, Runoff
Length of Impact	Len_Impact	Numerical - 10 characters
Feature Name	Feat_Name	Text - 25 characters

<b>Streams</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Groundwater Connection	Ground_Con	Text - Y or N
Bottom Width	Bott_Width	Numerical - 5 characters
Channel Depth	Chan_Depth	Numerical - 5 characters
Bankfull Depth	Bful_Depth	Numerical - 5 characters
Water Depth	Wat_Depth	Numerical - 10 characters
Substratum	Substratum	Text - 25 characters
Flow	Fl_Depth	Text – choose from - None, Low, Moderate, High
Pool/Riffle %	Pl_Rif_Per	Numerical - 10 characters
In-Stream Root Wad	Root_Wad	Text - Y or N
Canopy Coverage	Can_Cover	Numerical - 10 characters
Canopy Species	Can_Spec	Text - 100 characters
Aquatic Fauna	Aqua_Fauna	Text - 100 characters
Aquatic Flora	Aqua_Flora	Text - 100 characters
Habitat Assessment Score	HabAssScor	Numerical - 4 characters
Watershed	Watershed	Text - 40 characters
8-Digit HUC Code	HUC_Code	Numerical - 9 characters
Mitigation Required (yes/no)	Mit_Req	Text - Y or N
Scenic Feature	Scen_Feat	Text - 150 characters
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Wet Weather Conveyances</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Potential Impact	Pot_Impact	Text – choose from - Crossing, Relocation, Runoff
Feature Name	Feat_Name	Text - 25 characters
Bottom Width	Bott_Width	Numerical - 5 characters
Channel Depth	Chan_Depth	Numerical - 5 characters
Bankfull Depth	Bful_Depth	Numerical - 5 characters
Substratum	Substratum	Text - 25 characters
Flow Depth	Fl_Depth	Numerical - 5 characters
Canopy Coverage	Can_Cover	Numerical - 10 characters
Canopy Species	Can_Spec	Text - 100 characters

<b>Wet Weather Conveyances</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Aquatic Fauna	Aqua_Fauna	Text - 100 characters
Watershed	Watershed	Text - 40 characters
8-Digit HUC Code	HUC_Code	Numerical - 9 characters
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Critical Habitat</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 8 characters
Form G Label	FormGLabel	Text - 5 characters
Habitat Characteristics	Hab_Char	Text - 100 characters
Dependant Species	Dep_Spcs	Text - 100 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Species</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Species Name	Sp_Name	Text - 50 characters
Federal Status	Fed_Status	Text – choose from - LE, LT, PE, PT, D
TN Status	TN_Status	Text – choose from - LE, LT, PE, PT, D
Species Present in ROW	Sp_in_ROW	Text - Y or N
Species listed in USFWS letter	USFWS_ltr	Text - Y or N
BA Written	BA_Written	Text - Y or N
BA Conclusion	BA_Concl	Text – choose from - No Effect, Not Likely to Adversely Affect, Likely to Adversely Affect, Not Likely to Jeopardize.
USFWS Concurrence	USFWS_conc	Text - Y or N
Additional Measures Necessary to Protect Species	AddMeasNec	Text - Y or N
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Sinkholes</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Potential Impact	Pot_Impact	Text – choose from - None, Fill, Runoff
Open Throated	Open_Thro	Text - Y or N
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Caves</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Potential Impact	Pot_Impact	Text – choose from - None, Cut, Runoff
Bat Habitat	Bat_Hab	Text - Y or N
Bats Observed	Bat_Obsvd	Text - Y or N
Bat Hibernaculum	Bat_Hiber	Text - Y or N
Endangered Species	Endg_Spec	Text – choose from - None, Myotis sodalis, Myotis grisescens
Additional Fauna Present	Add_Fauna	Text - 50 characters
Scenic Feature	Scen_Feat	Text - 150 characters
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Springs</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Potential Impact	Pot_Impact	Text – choose from - None, Springbox, Runoff
Watershed	Watershed	Text - 40 characters
8-Digit HUC Code	HUC_Code	Numerical - 9 characters
Multiple Springs Present	MultSpPres	Text - Y or N
Continuous Spring	Cont_Spng	Text - Y or N

<b>Springs</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Mitigation Required (yes/no)	Mit_Req	Text - Y or N
Scenic Feature	Scen_Feat	Text - 150 characters
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)

<b>Wetlands</b>		
<b>Attribute Name</b>	<b>Shapefile Name</b>	<b>Field Type</b>
Unique ID	Unique_ID	Text - 15 characters
Station Number	Sta_Number	Numerical - 20 characters
Form G Label	FormGLabel	Text - 5 characters
Potential Impact	Pot_Impact	Text – choose from - Fill, Runoff
Isolated (Y/N)	Isolated	Text - Y or N
Watershed	Watershed	Text - 40 characters
8-Digit HUC Code	HUC_Code	Numerical - 9 characters
Mitigation Required	Mit_Req	Text - Y or N
Munsell Soil Colors	Muns_Soil	Text - 30 characters
Hydrology Source	Hyd_Source	Text - 50 characters
Vegetative Species	Veg_Spec	Text - 100 characters
Wetland Function	Wet_Funct	Text – choose from - Ground-water recharge Ground-water discharge Floodflow alteration Sediment stabilization Sediment/toxicant retention Nutrient removal/transformation
Scenic Feature	Scen_Feat	Text - 150 characters
Notes	Notes	Text - 250 characters
Latitude Coordinate	Latitude	Double (Double Precision Number)
Longitude Coordinate	Longitude	Double (Double Precision Number)